

DEC 5 1921

GENERAL LIBRARY

DEC-5 1921

UNIV. OF MICH.

Railway Age

SECOND HALF OF 1921—No. 23

NEW YORK—DECEMBER 3, 1921—CHICAGO

SIXTY-SIXTH YEAR

Published weekly by Simmons-Boardman Pub. Co., Woolworth Bldg., New York, N. Y. Subscription Price U. S., Canada and Mexico, \$6.00; foreign countries (excepting daily editions), \$8.00; single copies, 25c. Entered as second-class matter, January 30, 1918, at the post office at New York, N. Y., under the act of March 3, 1879.



AN ARCH BEHIND BOTH

Behind the performance of the fastest train
on every road stands the steam-making
power of the Security Sectional Arch.

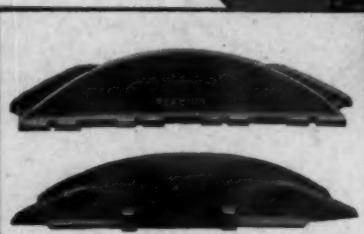
Behind the tonnage records of the most
powerful drag stands the capacity increasing
power of the Security Sectional Arch.

To know what an Arch means to locomotive
performance ask any 100% arch road.

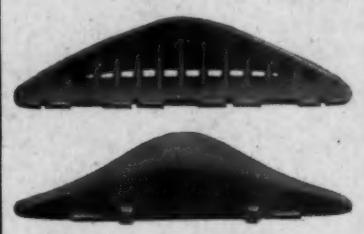


AMERICAN ARCH CO., INC.

Off-But not for long



Views of Inside Replacer



Views of Outside Replacer



Replacer Clamps

Are you interested in eliminating unnecessary expense and delay due to derailments of engines and cars?

If so, make Reading Replacers a part of your equipment. Reading Replacers are designed along practical lines.

No cutting or grooving of Replacer by flanges. The Replacers are designed to pick up wheels by the tread. They can be spiked to the ties or clamped to the rails.

Full particulars on request.

American Chain Co., Inc.

Reading Specialties Division

Bridgeport  Connecticut

In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

DISTRICT SALES OFFICES:

Boston Chicago New York Philadelphia Pittsburgh San Francisco
Portland, Ore.

**READING CAR AND
ENGINE
REPLACERS**



EDITORIAL

Railway Age

The Table of Contents Will Be Found on Page 5 of the Advertising Section

One problem confronting the executives of the small railways and, in a certain measure, the heads of the large roads as well, is to find lines of advancement

Are You Making for men whose work has been confined to certain special fields. This predication also arises with respect to the regular operating positions when a man

of exceptional ability develops faster than the other members of the staff. Some executives have solved this problem by a ruthless elimination of the less brilliant superior to make room for his more intelligent and aggressive subordinate, but except in cases of demonstrated incompetency this policy cannot be pursued consistently without becoming a bad influence on the esprit de corps. A more reasonable way to extend opportunity for promising material is to afford a greater scope of usefulness by a gradual widening of authority and responsibility. In short, make the place fit the man. A trainmaster may be given the title of assistant superintendent; a roadmaster may take over the duties of trainmaster in addition to his own, or a bridge engineer may be made principal assistant engineer with certain added responsibilities. As a matter of fact, this is being done and has been done for a long time and explains in part the diversity in the forms of railway organization in this country. The lesson in this to the aspiring young officer who feels that he is hiding his light under a bushel is to take the initiative in widening his own responsibilities, by doing more than is expected of him whenever the opportunity offers insofar as this may be done without causing friction in the organization to which he belongs.

Among the remarkable figures given in the report on the proposed superpower system are those dealing with the maintenance of electric locomotives.

Electric vs. Steam Locomotive Maintenance The cost of repairs, including engine-house expenses, for steam locomotives is assumed to average 42.6 cents per locomotive mile. For the electric locomotive equated to the same weight on drivers, a comparative figure of 8.26 cents per mile is given, or less than one-fifth the cost for the steam locomotive. The data from which the cost of maintenance of the electric locomotives was derived pertained only to direct current installations and included a total of but 196 locomotives. There is reason to doubt whether these figures are truly representative of what may be expected in extensive electrification. The conditions on the roads selected are probably unusually favorable for economical maintenance. This seems to be borne out by a comparison with roads whose maintenance figures are not given in the report. The maximum repair cost per mile shown for any of the electric locomotives included in the report is 16.7 cents, but for three roads not cited the cost in 1919 was 18.7 cents, 41.4 cents, and \$1.44 per mile, respectively. The last figure shows conclusively that electric locomotives are not always notable for their low maintenance costs. To use this as typical would be unfair, but it is likewise unfair to compare the maintenance of electric locomotives on short runs and in passenger service with that of steam locomotives in all classes of service. Most of the electric locomotives have been in use such a short period that

repairs are still lower than normal. It is difficult to prove just what the relative repair costs would be on a fair basis of comparison but the authors of the superpower survey must furnish additional evidence before their claim that the cost of maintenance of electric locomotives is one-fifth the cost for steam locomotives can be accepted as fact.

In dynamic times like the present, real accomplishment along lines not pressing daily for solution is only too likely to pass unnoticed. The improvement in

Improved Dining Car Service dining car service on a number of roads in recent months is a case in point. The same or better meals at lower prices are being offered to the travel-

ing public on a number of roads, so that now it is possible for a traveler to dine quite as well at the same or less cost than he could at the average restaurant of the better class. Few railroad officers are ignorant of the fact that good dining car service is a builder of business. They should not fail, therefore, in spite of the pressure of other business to recognize and appreciate improvement when their dining car departments bring it about. There seems to be a tendency in the direction of the table d'hote and plate dinners and more moderate prices in place of the rather expensive a la carte service. The popularity of these innovations can easily be proved by talking with the passengers on any road where they have been put into effect. The interest and appreciation of superior officers doubtless have gone a long way in assisting the dining car departments to bring about these changes. Further improvement is possible on some roads and the subject is one which commands itself, at least from time to time, to the attention of every supervising officer.

During the last two weeks in October of this year the railroads of the United States handled over 95 per cent of the

The Lessons Of a Year Ago maximum number of car loads of freight they ever moved. In fact in the St. Paul-Minneapolis terminals and in numerous other areas, the traffic actually exceeded that of the record period

of a year ago. This traffic was moved with an ease which stood out in marked contrast with the congestion which threatened to paralyze the transportation industry of the country in the fall of 1920. This year's record was made with a much smaller number of cars in service and with a quarter of a million less employees. This indicates that the lessons of the congestion of a year ago have not been forgotten and that the measures which were introduced at that time are still effective. It would be unfortunate indeed if the roads should forget those lessons which they learned during the period of the most intensive operation in their history and lapse back into their old practices. Conditions then forced the roads to exert every effort to move traffic expeditiously to prevent blockades. Economical operation requires adherence to those same methods now. The increasingly urgent demand for the reduction in rates can be met only by the adoption of every possible means for promoting

economy in operation. Railway officers must of necessity keep their organizations on the alert during the period of normal annual seasonal decline in traffic, which we are now entering, to insure that equally economical operation is secured as the pressure of traffic is relieved.

Great Britain has little cause for complaint on the score of her exports of railway equipment and supplies. In September of this year her exports of locomotives were valued at \$3,843,896, while

Britain's Equipment Exports for the same month last year they totaled only \$1,913,965 in value. During the same month of the current

year the exports of locomotives from the United States were valued at \$1,493,050 as against \$4,105,405 in September, 1920. Thus in the short space of a year Great Britain has, in the face of a world-wide depression, greatly increased her exports of locomotives while our exports, which a year ago were much greater than those of Great Britain, have fallen off sharply. In the matter of freight cars and trucks Britain has not been quite so fortunate—September of this year showing \$2,535,180 as against \$3,269,390 for September, 1920—but even in this the decline is much less marked than that in American freight car exports. The secret of Britain's success as an exporter of railway materials and supplies is not hard to find—British capital is invested heavily in foreign railways and British railway men operate a large proportion of the railway mileage in foreign countries, especially in South America. It would be difficult to persuade an American that our extensive methods of railroading, and equipment designed to meet such operation, are not better suited to most of these countries than are Britain's intensive methods and "dinky" equipment. British investors have not hesitated, however, to put their savings into foreign railways and it is fair to expect that these British owned and operated roads should purchase equipment of British design. Such action is, moreover, cumulative—in favor of the British manufacturer. Mere envy of the success of Britain's leadership in the foreign railway field, however, is valueless. What we must do if we want an extensive foreign business is to emulate her example in financing and operating railways in foreign countries.

The reorganization plan of the Missouri, Kansas & Texas announced last week (*Railway Age*, November 26, page

The M. K. & T. Reorganization 1043) reduces the fixed interest bearing debt of the old company from \$146,543,142 to \$100,320,913. The

fixed interest charges are reduced from \$7,429,376 (inclusive of sinking fund payments) to \$4,917,717. The plan proposes, in addition, the issuance of \$57,500,000, 5 per cent, convertible adjustment mortgage bonds bearing a contingent interest charge of \$2,875,000 cumulative from January 1, 1925. This reorganization plan is regarded as conservative. It relates to a railroad the operations of which have been characterized recently by marked progress. It is hardly necessary to discuss of what this progress has consisted as an effort was made to point it out in the columns of this paper in the articles entitled "Progress of Missouri, Kansas & Texas Since 1913," which appeared in the issues of June 10, 1921, page 1321, and June 17, 1921, page 1385. It is interesting to bring the facts up to date in a measure by noting that the net railway operating income for the Missouri, Kansas & Texas itself in the first nine months of 1921 was \$4,490,887 as compared with \$3,285,619 in the first nine months of 1920. The Missouri, Kansas & Texas of Texas, which incidentally had a standard return of about \$600,000, in the first nine months of 1921 had a net railway operating in-

come of \$1,677,038. In the first nine months of 1920, the Texas lines had a deficit of \$6,616,599. The M. K. & T. itself, for the nine months had an operating ratio of 80.1; its transportation ratio was but 36.6. The road at present is handling considerably less business than it was handling at this time last year. Nevertheless, it has succeeded in keeping up its train load and even exceeding the average for 1920, the latter fact being particularly true of the Texas lines. Bad-order cars on November 1 averaged but 7.1 per cent as against an average for the country of 15.0 per cent. These are merely a few of the outstanding facts, but they are sufficient to augur well for the operations of the road under the proposed plan.

There is a wide field for the greater use of milling machines in railroad shops where the work involves duplicate machine

Production Milling Operations operations on many locomotive and car parts. The milling machine is particularly adapted for this work because of the large proportion of power actually used in removing metal, the continuous

cutting action, and the high production of milling cutters each of which has numerous cutting points and edges. Both high production and accuracy of work are features of the modern milling machine which is designed to stand up under heavy cuts at high speeds. A four-head, planer type miller recently installed in the Beech Grove shops of the Big Four is used for milling the shoe and wedge ways on locomotive driving boxes, an operation performed in one-quarter of the time formerly required on a planer. Crosshead shoes, assembled in the crossheads, are milled in approximately one-third of the time formerly required. Before installing the milling machine four planers were kept busy on driving boxes and crossheads, but this work is now done on the miller in three days a week, the machine being free the remainder of the time for other work. It is unnecessary to point out the resultant saving in labor cost and there is also a considerable saving in floor space. The results secured are a strong argument for the installation of milling machines in many shops where the machine departments are not only congested but prove the limiting factor in shop output. The above conclusions do not in any way indicate that the day of the planer as an efficient, effective tool for performing certain machine operations has passed. For many operations the planer is the more adaptable tool and in other cases it would be difficult to get milling cutters of the required shape to perform the particular operations desired. Then, again, where only a single part is to be machined or where possibly the number of duplicate machine operations is small, it would not pay to make or buy milling cutters and adjust them in a milling machine. Experience has demonstrated, however, that the use of planers in repair shops for planing large numbers of driving boxes, crossheads, shoes and wedges and similar work is decidedly uneconomical. For machining these parts in quantity at a minimum cost of labor and time the milling machine is by far the more efficient tool.

In view of the growing demand for electrical power for the illumination of stations, the operation of pumping plants

Electrical Power Distribution and similar purposes, it is becoming increasingly advisable for the railroads to look well into the future when providing power. As an example, one road has designed its signal transmis-

sion line to provide sufficient additional power for the illumination of the stations in the smaller towns, the lighting of a number of the switch lamps and a reserve for emergency lighting at accidents and washouts. At another point

on this same road a coal chute is operated by a 15 h.p. motor connected to the signal power line. If a transmission line is being planned it is necessary that these additional power requirements be considered to provide sufficient capacity to prevent an excessive reduction in the line voltage when the motor is starting, for otherwise the automatic block signals might be released momentarily to the "stop" indication. The load factor, the distance from the motor to the sub-station and the power capacity available, are all questions entering in the problem. The economies resulting from the use of automatic electrically-controlled machinery at isolated points are so large as to warrant thorough investigation. It would, therefore, appear advisable to call a conference of the several officers concerned before any transmission line is designed.

The Railroads Must Defend Themselves Better

NO CAREFUL OBSERVER can doubt that public opinion is much less friendly to the railways than two years or even one year ago. The change which has occurred is illustrated by the alteration in the attitude of public men in Washington, by what many newspapers are saying and by what many people outside the railroad business are saying in private conversation.

Everybody is criticising the present rates of the railways. Some publications and persons recognize the fact that high labor and other high costs have made the present rates necessary, and that substantial general reductions of rates will be impracticable until costs of operation are reduced. Unfortunately, however, many publications and persons not only do not recognize the actual facts regarding the situation, but either wilfully or ignorantly misrepresent them. Never in ten years has there been so much misleading or downright false propaganda disseminated against the railways as now. It is being charged throughout the country that the salaries of their officers are grossly excessive; that they are wasting hundreds of millions of dollars through grafting contracts with outside concerns; that the valuation placed on their properties by the Interstate Commerce Commission is \$5,000,000,000 to \$7,000,000,000 too much, and that they are being guaranteed by the government, and are actually receiving a 6 per cent return on "watered" capitalizations and valuations. These and almost innumerable other fabrications have been put in circulation and are being persistently repeated. The effects being produced on public sentiment are bad.

This propaganda is coming mainly from two general sources. It is coming, first, from men like Clifford Thorne and Glenn E. Plumb who make a living by misrepresenting railway affairs, and from public men such as Senator La Follette whose political stock in trade consists of misrepresentations of all large industries, especially the railroads. It is coming, secondly, from the heads of the railway labor organizations and from literally hundreds of thousands of railway employees whose purpose is the promotion of the Plumb plan. Many persons who were not receptive to this kind of propaganda a few months ago have been made receptive to it by antagonism to the railways which they first began to feel because they believed that high railway rates were injuring them.

It is to the selfish interest of the entire nation that this malicious, false and selfish propaganda against the railways be refuted. It is especially to the interest of the owners and managers of the railways that it be refuted. And, in fact, it is being refuted. But, unfortunately, those who are engaged in spreading this propaganda are far more numerous, and are working actively in many more

communities, than are those who are answering it. Therefore, the propaganda is daily becoming more widespread and effective.

The *Railway Age* has said before, and now earnestly repeats, that the remedy is available to the managements of the individual railways and should be applied chiefly by them. Various organizations of the railways, most of them branches of the Association of Railway Executives, are engaged constantly in preparing data and arguments which completely refute the reckless calumnies constantly being circulated by those who desire to destroy private ownership and management of railways. The trouble is that not enough is being done through the organizations of most of the individual railways to get the facts about the railway situation presented to the people in their territories. Thousands of the employees of almost every railway are assiduously engaged in poisoning public sentiment in their various communities. In most cases the managements of the railways are doing little or nothing to supply an antidote for this poison.

There are railways in every part of the country which, through special departments established and maintained for that purpose, are doing effective work to nullify the effects of the anti-railroad propaganda being carried on. This ought to be true, however, not merely of only part, but of all of the railways. Not a single false or misleading statement regarding railway management or railway regulation should be allowed to be published anywhere without an answer to it being promptly sent to the paper in which it appears, with a request for publication of the answer. But there are literally thousands of such misrepresentations appearing in the press, not only every month or every week, but almost every day, and a few men scattered here and there cannot possibly answer them all. The amount of work done to get to the public the truth about the railroads ought to be equal to the amount of work done to get to it misrepresentations of them, but it is not anywhere near equal to it.

The preponderance of the propaganda against the railways over that being carried on in their defense is so great that it is becoming a serious menace to all fair and reasonable regulation, and to private ownership and management. The duty of the railway managements to the owners of their securities, and their duty to the public, demand that many of them shall awaken to the situation that is developing and deal with it more effectively.

Tonnage vs. Net Earnings

THE MEASURE of success which a management achieves in the operation of a railway property is reflected in the minds of its stockholders and the public at large by its net operating income, rather than by the amount of traffic which it handles. Obviously this income is dependent upon the difference between the amount which the road receives for the transportation of the various commodities and what it costs to haul them. As a common carrier, a road must of necessity try to handle all traffic that is offered to it. However, a large part of the tonnage of almost every road is competitive and is secured by direct solicitation. It is in the selection of the traffic which it sets out to solicit that a road can exercise a discretion which will be reflected in its net earnings. The traffic department can do much to promote the interests of its road in such matters. Unfortunately, the success of this department as a whole and that of its individual solicitors is too often measured by the amount of tonnage secured rather than by the profit which the road can earn from it. One of the most marked evidences of this incorrect viewpoint prior to federal control was the active solicitation of traffic for movement over other than the most

direct or economical routes. From the standpoint of the public any such movement which adds to the cost of transportation constitutes an economic loss. While it is true that the out-of-pocket cost of handling such traffic, in addition to that already moving, is less than the average of all, an analysis of this indirect movement of traffic will show many instances where such freight is being hauled at an actual loss to the road on even this basis. With unified control and the elimination of competition during the war, the incentive for such routing was eliminated and it was greatly reduced. Since the return of the roads to individual competitive operation, this tendency has again asserted itself and the limited traffic during the current year has given it added impetus. The result is that some of the old practices are again in vogue. This condition calls for increased supervision by executive and traffic officers to eliminate this waste and to promote the interests of the roads themselves. It also calls for the recasting of the units of measure of the success of the traffic solicitors in order that profit from transportation rather than tonnage shall be the primary consideration.

The Evolution of Contract Agreements

THE CONSTRUCTION contract is the product of evolution. In the early days of modern construction work, the contract form was the work of the individual and such semblance of uniformity as prevailed at that time arose from the fact that few men are of a truly original turn of mind with the result that they abstracted largely from each other's documents. As organizations of architects and engineers were formed, a natural development was the drafting of uniform contracts to meet the common opinion of the men engaged in a particular class of construction. Classic illustrations of this are the uniform contracts of the American Institute of Architects and of the American Railway Engineering Association. The best thought of groups of men interested in these two classes of work was brought to bear in establishing certain standards of practice and while the resulting instruments are not used in their entirety by all persons naturally falling within these two groups, they have had profound influence in thoroughly establishing certain usages.

A step further in advance has been the co-operation between builders and architects as carried out in some of the larger cities through the promulgation of uniform contracts which now have the formal recognition of established bodies representing both of the parties to such agreements, and because of the high degree of standardization now obtained as regards particular classes of work, the contractor is afforded a reasonably well-established understanding of what is expected of him.

A new situation has arisen because of the development in more recent years of a class of large contractors who engage in many kinds of construction. More recently the dearth of railway construction and the enormous growth of highway building has led many firms of railway contractors to take up highway work. As a consequence, many contractors are now compelled to deal with a variety of contract forms and have thus been brought face to face with a need for a still greater degree of standardization of contract agreements. This has given rise to the organization of a joint committee on standard contract forms to be comprised of representatives of both the designers and builders in all lines of work who will combine their efforts in an endeavor to formulate standards for those portions of the construction agreements which are applicable to all classes of work.

It is believed that representatives of the American Railway Engineering Association and the railway contractors will play an important part in this work. In no class of large scale construction has practice been more thoroughly established by accepted usage over a greater period of years.

The representation of railway men and railway contractors should, therefore, be of distinct value on this committee. At the same time, the railways can derive no small degree of benefit from the work that such a committee can do through the greater degree of uniformity in the contracts which individual railways now use in the carrying out of work of different classes.

New Books

Proceedings of the American Wood Preservers' Association for 1921. 590 pages. Illustrated. 6 in. by 9 in. Bound in cloth. Published by the American Wood Preservers' Association, George W. Hunt, secretary, Madison, Wis.

This volume contains the proceedings of the seventeenth annual meeting which was held at the Hotel St. Francis, San Francisco, Cal., on January 25-27. Among the reports included in these proceedings which are of particular interest to railway men were those on the effect of the zinc chloride process of preservation on the strength of timber, the service tests on treated ties, the layout of switch-tie yards, and inspection. Of particular interest and value was the elaborate report on the San Francisco Bay marine piling survey in which were included the results gained up to that time from the detailed study of the action of various forms of wood-boring insects on piling in railway and other docks in that harbor. The proceedings also include a large amount of data regarding the quantity of wood treated and the preservatives used in the United States during 1920.

Waste In Industry. By the Committee on Elimination of Waste in Industry of the Federated American Engineering Societies. 409 pages, illustrated, 6-in. by 9-in. Bound in cloth. Published by the McGraw-Hill Book Company, New York.

As indicated by the title, this book deals with the problems of industrial waste, and includes in detail the report of the committee of the Federated Engineering Societies on this subject. The results of the committee's investigations and their findings are presented in three parts which consist of a summary of the reports; six chapters covering the six industries of building construction, men's ready-made clothing, boot and shoe, printing, metal trades and textile; and seven chapters dealing with various classes of labor problems, safety first problems, health conservation and other general matters. The reports indicate that wastes in industry are due chiefly to low production resulting from faulty management; interrupted production; restricted production brought about by labor or managements; and lost production caused by accident, ill health, etc. While not covering the railway field directly there is much of interest to the railway man for the reason that many of the wastes in each industry show somewhat of a general similarity, and thus may apply in varying degrees to conditions in the railway work.

Code Numbers on Interline Forms. December 1921 Edition. 20 pages. 6 in. by 9 in. Bound in paper. Published by Railway Accounting Officers Association, 1116 Woodward Building, Washington, D. C. Price 5 cents.

This booklet is a list of the code numbers devised by the Railway Accounting Officers Association and intended to be printed on the various interline forms just preceding the name of the carrier issuing the form. The code numbers assist in the sorting of interline forms and eliminate many possibilities for error which exist by reason of the similarity of names. The use of the code numbers will eliminate the labor of coding by those carriers that need such information when using mechanical devices and the code number of the carrier issuing the form, when printed as indicated, will tend to eliminate errors which might otherwise be made by code clerks.

Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

The Golden Rule in Railway Work

PENNSYLVANIA.

To THE EDITOR:

The communication entitled "Big Stick vs. Golden Rule" which appeared in your issue of November 26, was read with much pleasure. In my opinion it struck the right note in the present industrial situation. The writer had the privilege, some weeks since, of addressing a meeting of subordinate officers, in which he talked about the labor troubles and discussed causes and possible remedies. After appealing for a restoration of the old spirit of a generation or two ago, the following was said in conclusion:

"How can this be brought about? By fair and equal treatment; even-handed justice; mutual confidence; faithful performance of duty with service cheerfully rendered, and finally, a spirit of uniform courtesy and of kindly consideration to be shown between and among all classes of workers—management as well as rank and file. The common principles of Christian charity properly applied could easily accomplish all this."

"In the last analysis it means simply this; that men and women of all degrees in their relations with each other must be governed by these principles which were promulgated (by being lived) by Him, who came into this world, taught the principles of right living, suffered, died and rose again; and while He spake as no other man ever did, was Himself a working man."

"In other words we have, all of us, simply got to align our lives with these principles and give the spirit of Christianity a real chance in this world, or the world cannot be saved industrially, economically, morally, spiritually or in any other way."

Nothing new in the above, just the same old truths; but after 50 years' experience in the railroad work, seeing and in more or less close touch with the great changes in that work during this time, it is my intense conviction that the only solution of the present troubles lies along these lines.

AN OLD RAILROADER.

The Use of Boiler Compounds

CHICAGO.

To THE EDITOR:

The article entitled "The Interior Treatment of Boiler Waters," by C. R. Knowles, superintendent of water service of the Illinois Central, which was published in the *Railway Age* of November 12, should be read by every railway officer who has to do with operating or mechanical maintenance problems. Mr. Knowles has shown considerable courage in placing before your readers facts which are not generally taken into consideration, during a discussion of the subject of water treatment. The remarkable lack of uniformity of opinion, on the part of those responsible for trunk line locomotive operation, would not be so evident if every officer concerned would read this article thoroughly.

It may be a shock to some who have authorized expenditures of hundreds of thousands of dollars for treating plants, to learn that these treating plants do not produce pure water. However, it should be of some comfort to these gentlemen to be informed that absolutely pure water, even if it were obtainable, would not be, in all respects, a good boiler water.

If it were, it would probably be unnecessary for the United States Navy, for instance, to purchase large quantities of boiler compound, as it does, to be used in water which is almost 100 per cent distilled.

So far as compounds are concerned, it is frequently pointed out that practically all of them are based on soda ash, and several large railroads take the position that since this is true, they may as well use the raw soda ash. It would be just as logical for them to assume that since the major ingredient used in the making of bread is flour, we may as well do away with the bread, and eat the raw flour.

Within the past few days, the writer was a passenger on a railroad which operates throughout with raw soda ash as a water treatment. In a distance of 90 miles, the blow-off cocks of the locomotive of this train were opened 22 times, for periods averaging 10 seconds each. This blowing was necessitated by the foaming tendency of the water, due to the use of soda ash, and for the purpose of changing out as much of the concentrated solids in the boiler as possible. Multiplying this amount of blowing by at least four times, to obtain the corresponding figure for freight locomotive operation, and reducing it to pounds of fuel, we have a fuel wastage, through blow-off cocks, which is startling.

If, by this means, we are getting rid of the solids which had been precipitated out of the water by the treatment, the situation would not be so bad, but we do not get rid of any considerable quantity of solids by blowing locomotives which are working. Solids are expelled through the blow-off cocks when they are open, after settlement of the water, either after a long wait on the siding, or after the fires are knocked in the locomotive terminal. In the case of one railway, which had been using raw soda ash for years, this situation was brought to the attention of higher executive officers on an inspection tour by the error of an engineer in opening the blow-off cock on the windward side, by which means he succeeded in painting the varnished equipment of the train a beautiful white from one end to the other.

A properly designed boiler compound was put into service on this trunk line, with the result that the boilers are being maintained in a cleaner condition and the blowing is all done in the terminal, under supervision of those responsible for the maintenance of the boilers. The saving in fuel was far more interesting to those responsible than was the appearance of the train. A ten-second blow, after the water is settled, is more than equivalent to the blowing which had previously been done while the locomotive was working.

If, as Mr. Knowles points out, only six per cent of the water used in locomotive boilers is at present the production of treating plants, the importance of the proposition of interior treatment by means of compounds cannot be otherwise than tremendous. Yet we find a tendency among water engineers to bend all of their efforts towards obtaining treating plants, and then towards obtaining the best service therefrom, while only haphazard consideration is given to the treatment of the vastly greater quantity of water used which cannot be the product of treating plants.

Those who consider the use of internally-applied compounds a haphazard method, in that this class of treatment cannot be properly adapted to the water sources used in the boilers, forget the fact that while this is true, scale already formed can be attacked by a given compound, even though the waters which formed this scale are made up from many sources greatly varying in their characteristics. In the use of boiler compounds we have more a boiler treatment than a water treatment, since their use results in attacking and throwing down scale already precipitated by the high temperature.

Let us put it this way. Proper treatment of water in the wayside plants throws out of the water certain impurities which would form scale before the water enters the boiler. Boiler compounds, used internally, attack scale after it has been thrown out of solution by heat. In the end the boilers

themselves tell the story, which should guide us, and it should make little difference to those responsible for these boilers which method is theoretically or chemically correct provided they are kept clean by the most economical means.

L. F. WILSON,
Vice-President, The Bird-Archer Co.

Why Railroad Officers Go to Washington

OMAHA, Nebraska.

TO THE EDITOR:

I have read carefully George N. Brown's article on "How to Better Bad Railroad Conditions," in the *Railway Age* of November 5, page 905. One must consider that it applies almost wholly to rates, and does not cover the operating problems or expenses that are so closely interwoven with earnings. Granted that many railroad officers spend considerable time in Washington, let us consider why.

The period of "regulation" dates back to 1907, as stated by Mr. Brown, and the regulation has increased in volume steadily during the 14 years since that time. This regulation by governmental authority for several years had to do mostly with the earnings of railroads. In an effort to secure an understanding of the justice (or injustice) of rates, it was quite necessary for railroad officers to put in much time in securing information and data bearing on questions that were brought out by applications for reductions or increases and to make arguments before the tribunal having authority to make final decisions.

Mr. Brown says: "About that time complaints by shippers began to increase rapidly and the commission was continually engaged in adjusting rates and rules and rate relationships."

Quite true; and why? Because industries through their associations and organizations began immediately to apply to the authority created by law for changes in rates that would benefit their particular business or extend and enlarge the territory in which they could operate with profit in competition with other industries. They felt that they could secure the relief or benefit by argument before the commission with less effort than to discuss or argue their applications with officers or individual railroads where (in a great number of cases) the rates asked for were sectional and general of application and affected several railroads. It was easier to make argument before an examiner for the commission, or the commission, than to the railroad rate-making bodies, since they would immediately have their case before the proper authority established to pass finally on the matter. This required the railroad officers to attend hearings, give testimony, make explanations, file information and data and to likewise make application to the commission for changes in rates, a natural consequence of having the authority to decide vested in a centralized tribunal.

There is much that the writer does not know or understand about rates or rate making, as I am, and have always been, in the operating department. Perhaps I can best explain my thought by making a comparison.

The Railroad Labor Board, authorized by law to consider wages, working rules and conditions, and "disputes" between the managements and employees, is having the same experience as did the Interstate Commerce Commission as to the "increase in complaints" and is "continually engaged in adjusting rates and rules," except that their decisions have to do with the expenditures of the railroads rather than earnings. The board recently called attention to the large number of "disputes" that had been filed for consideration and stated as its opinion that many of them could have been avoided by co-operation between officers and employees. Quite true. However, when Decision 119 was rendered by the board there was a painstaking, earnest effort made by

the railroad managers to meet with the recognized representatives of the employees for each craft or class and discuss proposed modifications of rules and working conditions as instructed by the board, applying the principles laid down by it as a basis for discussion. What was the result? Days of preparation of data, drafting of rules, correspondence with the authorized representatives of employees, conferences, argument, discussions, explanations as to the meaning of rules proposed and their application, comparisons with the national agreements, modification of proposals, further discussion and finally, after much delay, the "dispute." Then in a good many cases the representatives of employees declined to join in a submission to the board, saying "we have nothing to refer, the national agreement suits us." Then came the ex parte submission to the board by the railroad officers to comply with their instructions or the joint submission where the representatives of employees would join.

I wonder if any member of the board would say to the railroad officer, as did the commission to the traffic manager, "I say to you that wherever your rules and regulations are unjust and unfair, you have the undoubted right to change the same. Make the proper change and advise the (board) why you did it?"

Hardly. They said just the contrary, "No changes in rules or working conditions are to be made without the approval of this board."

Truly it may be said, "It has become the settled habit of many railroad officers to spend most of their time in Chicago or riding to and from Chicago." Why? Just so long as there is any authority by law to regulate wages, working rules and conditions it is (and I fear will be) impossible to secure by agreement with the representatives of employees any change in wages or rules, unless the change increases compensation, or at least does not reduce it.

I make no criticism of the position they take. Human nature is the same the world over. Argument must be made before the tribunal having authority to decide, and this requires the railroad officers to spend much time in Chicago. Is it necessary? Was it necessary for them to spend time in Washington? Why do we have commercial associations? Why farmers organizations? Why manufacturers associations? Apply the same restrictions to business concerns that the railroads are now subjected to and create a commission to regulate the prices they shall receive for their products. How soon would the officers of these business interests apply for increases? How soon would the public apply for reductions? Go further and create a board to regulate wages and working conditions. How long would it be before the employees would ask for increases or changes, or the officers of the businesses interested ask for reductions? Would the officers "get back to their jobs and stay there?"

The railroads manufacture only one commodity—transportation. Under present regulation, if all the "railroad managers should get back to their jobs and stay there," would we not find very soon that we were manufacturing an article that could be marketed only at a loss—a considerable loss? It is only by carefully watching the cost of manufacture and being aggressive and efficient in selling the product that any business can succeed, so what more necessary than consistent effort to keep the cost of production down, or the sale price up to a point where reasonable profit can be taken, or at least one balance the other to avoid failure and bankruptcy. So long as the greater part of the cost of manufacture or production, and all the selling price, is controlled by tribunals established by the government, what more natural than a consistent effort to have the one reduced, or the other increased, by these tribunals in order that the railroads can show reasonable profits?

Under these conditions, should railroad officers stay away from Chicago, or Washington?

W. F. THIEHOFF,
General Manager, Chicago, Burlington & Quincy.

The Preservative Treatment of Car Lumber

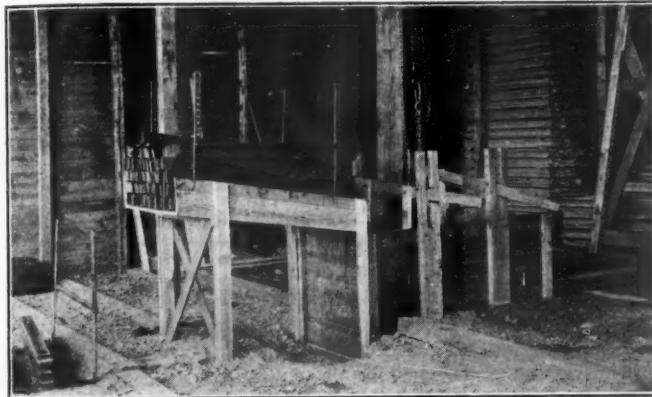
Practical Results So Far Obtained Suggest the Desirability of an Extension of the Practice

By H. S. Sackett

Assistant Purchasing Agent, Chicago, Milwaukee & St. Paul

ASIGNAL VIRTUE of wood which alone makes it more suitable for general car construction than steel is the readiness with which it may be protected against natural deterioration or decay by chemical treatment. This is accomplished before placing in the structure with positive assurance that it will be serviceable for the full mechanical life of the part. Steel must be continually painted with rust- and acid-resisting paints to protect it against early failure because of corrosion.

Prior to the last few years very little attention has been given to the influence on car maintenance of decay in wood



Small Tank for Creosoting No. 1 Common Yellow Pine Decking and Roofing; 250 to 400 Pieces Per Charge Immersed 30 Min.; Repairs Caused by Decay Already Reduced More Than 50 Per Cent

members of freight cars. Car builders were prone to charge a great majority of failures to mechanical causes. It developed during an exhaustive investigation conducted for a period of two years by a special committee of the American Wood Preservers Association, that the contrary was more to the point.

Analysis of a questionnaire distributed through the Master Car Builders' Association indicated that at least 30 per cent of all repairs to freight cars of all-wood or composite construction were directly due to decay.

This information was, of course, generally based on the experience of the car foremen who supplied it, and it may be assumed that but little care had been given to gathering data that would be conclusive. An effort was made, therefore, to check the estimated figures as provided in the committee report* for which purpose a special clerk was placed by one of the committee members in a western car repair shop, whose experience could give accurate judgment as to whether decay or mechanical failure was the primary cause for the respective repair or replacement.

An interesting fact developed incidentally in this investigation was that during the month that this special inspection was in force 1,100 steel cars and 399 wood cars were repaired at the shop in question. As the shop is located in a

section of the country where wood equipment still predominates it may be significant.

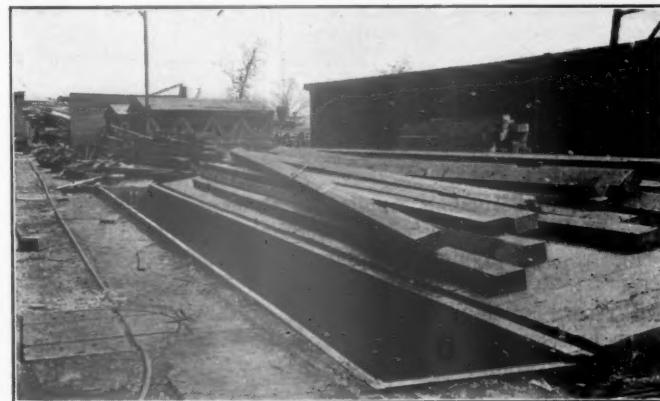
It was shown that of a total of 265,666 individual parts or pieces replaced, 82.3 per cent failed directly because of decay, and 17.7 per cent represented mechanical failure. The repairs were distributed approximately as shown in the accompanying table.

DISTRIBUTION OF REPAIRS OR RENEWALS OF WOOD CAR PARTS BY CAUSES

Description of part	Causes of failure	
	Decay, per cent	All other causes, per cent
Draft timbers.....	0.0	100.0
End sills.....	34.4	65.6
Deadwood.....	7.4	92.6
Long sills.....	68.0	32.0
Sub-sills.....	26.2	73.8
End posts.....	32.4	67.6
Coal car sides.....	80.1	19.9
Running boards.....	97.3	2.7
Roofing.....	100.0	0.0
Siding.....	89.5	10.5
Lining.....	89.1	10.9
Decking.....	95.4	4.6
Grain strips.....	96.5	3.5

The types of cars included in this investigation, which constituted the regular run of bad order cars turned in at this shop, were distributed as follows: box, 223; coal, 87; ballast, 23; flat, 20; refrigerator, 19; stock, 17; tank, 10.

These data when submitted to car builders, have caused



Open Tank Creosoting Plant for Treating No. 1 Common Yellow Pine Car Sills; Treated Sills Show No Decay After Four to Six Years' Service

much astonishment and, perhaps, some doubt. There may be circumstances which would not allow of their application, in toto, to all other shops in the country. However, there is no record of a similarly thorough investigation at any other point, and it is prudent to give very careful consideration to the facts here disclosed.

The main fact that is gleaned from these data is that the preservative treatment of car lumber is necessary as a matter of straight economy and essential as a conservation measure. This is merely another instance where reasonable precaution—maximum efficiency in utilization—would materially increase the durability of cars as a whole and reduce the cost of maintenance, thus in many cases making unnecessary the substitution of more costly steel equipment. In

*See the proceedings of the American Wood Preservers' Association for 1919.

other words, in the past we have not obtained the maximum service from wood because of our negligence in applying comparatively inexpensive remedial measures and have, therefore, not really learned the ultimate value of wood for the several purposes under consideration.

It is true that certain changes in present shop practices must precede the introduction of treated timber in car construction; but that is a comparatively unimportant detail when the more costly changes which the adoption of all steel equipment would necessitate are considered. The latter would not only entail new shop practices but complete reorganization and almost entirely new tools and equipment or rather, duplication of machinery because the composite cars built during the last five years or so would require maintaining the present shops for their repair. Consequently, by following lines of least resistance and choosing the lesser of two evils, if they are to be considered such, immediate adoption of treated car material is a good policy and fits in well with the present desire and need for economy, wherever that may be practicably applied.

Treated material can be used in practically every type of car. Whenever creosoted timber is not suitable because of the fear of contaminating lading, the lumber may be treated with zinc chloride, sodium fluoride, etc. Methods of treatment are standardized and each standard treatment has its



Condition of Stenciling Applied to Creosoted Surface After Eighteen Months' Service; Surface Prepared by Applying One Coat of Pure Shellac

own record of achievement under suitable circumstances. There exists no insurmountable obstacle to the practice of wood preservation in car construction.

Refrigerator cars have been in service for between 7 and 10 years with treated sills. At first they were brush treated with creosote and when this had proved worth while the sills were creosoted by the open tank process. To the treated sills were added creosoted sub-flooring and roofing for the under-course. More important still, never have the owners received a complaint that lading has been contaminated, although some cars of the latter type have been in meat service for over a year.

When speaking of treated timber for freight cars one naturally thinks first of stock cars, and these surely provide the greatest opportunity for saving in this direction. Stock cars with creosoted sills and decking have been in service for about 12 years without a single repair due to decay, where untreated stock car decking fails in from 4 to 6 years and sills in from 5 to 8 years. However, this is not the limit to which treated materials can be used in this type of car. Practically the entire car should be treated, from sub-sills (on steel underframe cars) to the roof. Where stenciling is necessary that can be applied to special boards, or it can be taken

care of by the use of metal numerals and signs, the cost of which would be a small item in comparison to the saving derived from the use of treated lumber.

Coal cars, flat cars, logging cars, caboose and housing cars all offer the same opportunity for economy by protecting the wooden parts against decay. Of box cars the sub-sills and nailing strips may be creosoted and the decking treated with sodium fluoride or zinc chloride where proper facilities are available. It may also be that other parts of box cars could be treated with these latter preservatives, but on that point there exists too little information at this time to allow a definite recommendation.

The particular advantage in addition to obtaining increased service is that preservative treatment allows the use of lower grades of wood, especially the presence of a goodly percentage of sapwood. In fact, sapwood is a partial advantage as it is more absorbent, takes treatment more readily and, therefore, gives greater protection to the stick.

Some shops are applying creosote oil to points of contact of sills, posts, etc., and the specification for the box cars developed during the war required treatment at such points with either paint or creosote. This is a step in the right direction, although paint cannot be considered a preservative in that it does not possess the necessary toxic qualities to inhibit the development of wood destroying fungi, or to kill the spores thereof that may be present on the surface and in the checks of the timber. However, it must be remembered that the value of any preservative treatment is in proportion to its thoroughness. Practically all car shops could equip themselves at little expense to employ the open tank process, and some roads operating pressure treating plants could arrange for the treatment of car material at these plants. The means for the practice of wood preservation, either by the use of surface treatments, the open tank process, or by employment of material treated at commercial or railroad plants with the standard pressure processes, are available in such varied form that no reasonable excuse can be advanced for continuing the abuse and waste of wood due to preventable decay. No repair yard, carpenter shop, or construction point along the railroad but can secure a barrel of creosote and a brush and at least partially protect such wood as it used against decay. As to the technical information involved, that likewise is readily obtainable and can be assembled by every engineering department and reduced to practical instructions to the workmen to bring about the desired results. Consequently, no extended discussion of these details need occupy us at this time. Suffice it to repeat that this is one means by which railroads can save enormous sums now expended for repairs that could be postponed or prevented were the lumber given the proper opportunity to serve its full period of mechanical usefulness by the simple expedient of reasonable protection against decay, applied before placing in the structure.

JAPANESE OWNED RAILWAYS in China have recently given manufacturers in Japan orders for cast iron pipe totaling 3,000 tons.

THE FREIGHT CLAIM DIVISION, A. R. A., has issued a circular for the benefit of receiving clerks containing the following: *Don't Accept Shipments for Transportation* in barrels overloaded; in packages without marks; in packages insecure or weak; in packages with loose boards; in packages with improper tags; in packages requiring recoopering; in packages with contents rattling; in packages with insufficient nails; in packages with old consignment marks; in fibre boxes where edge seams are torn; in packages illegibly or not properly marked; in packages without rope, contents protruding; in fibre boxes with flaps not glued or sealed; in second-hand fibre boxes, unless in perfect condition; in packages with the name of consignee or the destination abbreviated; and in fibre boxes which are tied with rope, the flaps not glued or sealed.

Avoiding Waste in the Operation of Locomotives*

Determining the Most Economical Tonnage for a Given Division—
Avoiding Excessive Delays at Terminals

By William Elmer

Superintendent Middle Division, Pennsylvania Railroad

LOCOMOTIVES are classified into major groups as freight, passenger, shifting and work locomotives. There are 65,000 locomotives on the railroads of the United States and half of them are in freight-train service. Thirty-two thousand and eighty locomotives earned a freight revenue of \$4,325,078,866 in 1920, or an average of \$135,000, per locomotive per year. Each engine made an average of 59.3 miles per day or 1,800 miles per month. The average freight engine earned for its owners \$370 per day or \$6.25 per mile run. This is at the rate of \$15.40 per hour or about 26 cents per minute. The striking thing in the group of facts above presented is the figure of 59.3 miles per day made by the average freight locomotive. How can we excuse an average mileage for all the freight locomotives in this country of less than 60 miles per day? We can picture the average freight locomotive rolling along the rails at 15 miles per hour and that means less than four

data a true profile may be plotted, showing the elevations above sea level and the actual grades; but this profile will not be fully representative of the resistances encountered by moving trains until it has been transformed into an equivalent compensated profile by superimposing the curve resistance on top of the grade resistances for each direction of traffic. We can imagine a railroad so full of sharp curves that a very considerable resistance would be experienced by a moving train. Many experiments have been tried in an effort to find how much resistance various curves offer to a moving car, and we will take 1 lb. per ton of 2,000 lb. per degree of curve. The resistance due to grade is fortunately an exact mathematical quantity—20 lb. per ton for each 1 per cent of grade. Therefore each degree of curve offers the same resistance as a 0.05 per cent grade. A 6-deg. curve has the same resistance as a 0.3 per cent ascending grade. A grade which is climbing upward at the

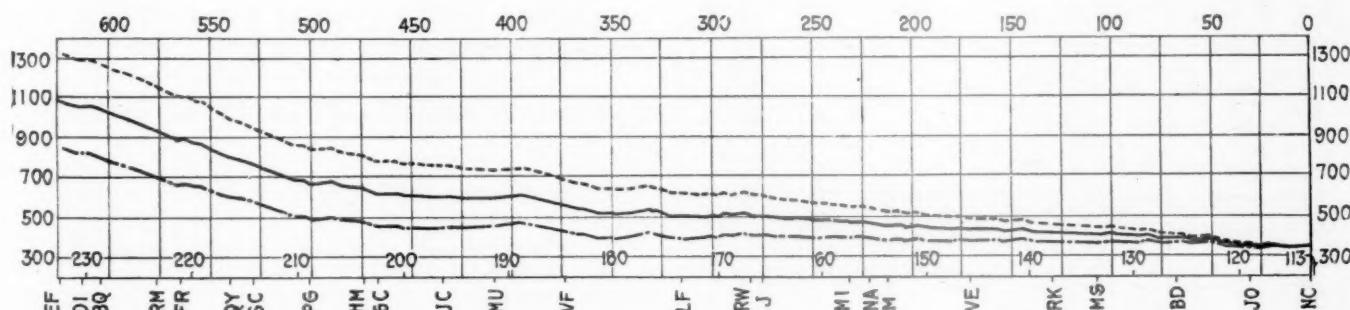


Fig. 1—Actual Profile of a Division and Equivalent Profiles, Eastbound and Westbound

hours out of each twenty-four actually moving trains. The locomotive spends its entire time either in the hands of the transportation department moving trains or ready to move trains, or in the hands of the motive power department being repaired and prepared. Roughly we may say that the engine is in the hands of each of these departments about half the time. Of course there is avoidable waste in each.

Taking up first the transportation department, there are two broad inquiries which may be made:—(a) Are the engines properly loaded? (b) Are they properly used? Assuming that suitable engines have been furnished the transportation department, or taking the engines on any division as we find them, how are we to know when they are properly loaded? If a dynamometer car is available, road tests may be run to determine the drawbar pull of the engines and to measure the resistance of trains of various make-ups on the ruling grades at the desired speeds. In the absence of this facility it may be desirable to outline the procedure.

Are the Engines Properly Loaded?

A track chart of the road is necessary, giving the distances from the starting point to the beginning and ending of each curve and tangent, with the degree of curve, and elevations of points where the grade changes. With these

rate of 26.4 ft. per mile or 0.5 per cent and has in it a 6-deg. curve, or 955 ft. radius, will therefore have superimposed on the true grade of 0.5 per cent the equivalent resistance of a 0.3 per cent grade due to the 6-deg. curve, or a total equivalent grade of 0.8 per cent. Of course, to a train coming down this hill, the equivalent grade would be the difference between these values, or 0.2 per cent.

A typical equivalent profile is shown in Fig. 1, in which the solid line is the actual profile, the dotted line above it the equivalent west-bound grade and the dot and dash line below it the equivalent east-bound grade.

Having determined the equivalent grade, it will be necessary to decide whether it can be operated as a momentum grade or not. If the length of the grade or other physical conditions on the approach prevent attaining any considerable speed, the dead pull of the locomotive will have to be depended on to get the train over. The tractive power of a locomotive is readily calculated from a very simple formula where p is the boiler pressure in pounds per square inch by gage, d the diameter of cylinders, l the length of stroke and D the diameter of the driving wheels, all in inches. For a simple two-cylinder engine, tractive power = $0.85pd^2l/D$. When a locomotive is moving, some of its tractive power is used to overcome friction of the engine and tender, and on a grade some more is needed to lift its weight against gravity, and at speeds of more than six or eight miles per hour the boiler becomes a factor in

*Abstracted from a paper entitled "Avoidable Waste in the Operation of Locomotives and Cars," to be presented before the Railroad Division of the American Society of Mechanical Engineers, New York, December 6.

its inability to furnish enough steam to follow the pistons with full pressure under long cut-off conditions, so that some more complicated formula becomes necessary in the calculation of the tractive power required for moving trains. Besides the resistances due to curves and grades, trains are affected by journal and flange friction, wind, rolling resistance, temperature, etc.

It is a well-known fact that trains cannot be loaded on tonnage alone. One hundred empty cars weighing 20 tons each would be a 2,000-ton train, and might overload an engine to the stalling point, whereas the same engine on the same grade would handle twenty-five 80-ton cars with no trouble. The number of axles is the important factor, and in order that a long empty train may have the same resistance as a short loaded train, it is necessary to use a factor for each car, known as the adjustment factor. This factor will vary with the different physical conditions met with on different divisions.

Having discovered the adjustment factor for any given division, and knowing the principal types of freight engines in use on that division, it is well to construct tractive power-speed curves for the various engines, and plot on the same sheet adjusted-tonnage train-resistance curves on various level and compensated-grade tracks, so that the intersection

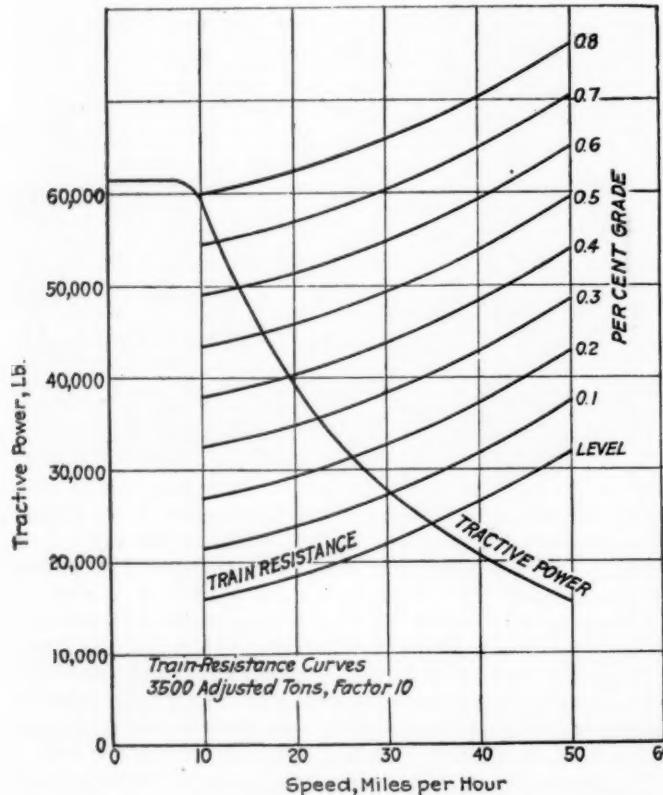


Fig. 2—Tractive Power and Train Resistance Plotted to Show Limit of Speed on Various Grades

of the tractive power curve with any given grade will show the speed that could be maintained with a full-tonnage train on that grade. A sample curve is shown in Fig. 2.

It will be noted that the curve showing train resistance on a level track intersects the tractive power curve at 35 miles per hour, consequently this is the maximum speed the locomotive in question can maintain on straight level track with a train of 3,500 adjusted tons. On a grade of 0.8 per cent, the maximum speed is 10 miles per hour.

After having completed the above described investigations and having before us the equivalent profiles and the speed curves on various grades, we can lay out a schedule of the

running time between the various towers, adding the necessary time to cover the initial and final terminal delay, water stops, coal and fire-cleaning stations, interference from passenger trains, etc., and bearing in mind the overtime limit based on a speed of 12½ miles per hour for the distance between terminals and the time the crew is on duty.

Now comes the crux of the whole matter. After the tonnage has been established, what are the results on the road? Do the trains lose so much time sponging or setting off cars with hot boxes, or draw heads out or brake rigging down, or due to interference from other trains that they cannot get over the road without excessive overtime? If the dispatching and terminal and road supervision are all that they should be and a record has been made for a sufficient period from which may be drawn reliable conclusions, we can de-

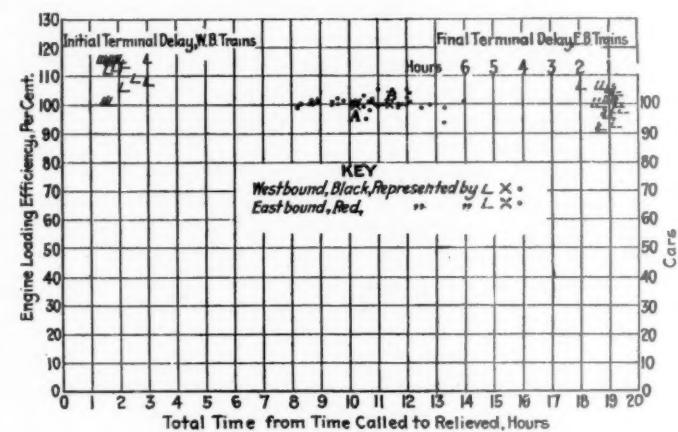


Fig. 3—Chart Showing Elapsed Time of Trains and Terminal Delays

termine whether the overtime is excessive;—in which event the tonnage should be decreased, or if the majority of the trains get over the road within the overtime limit, that the tonnage should be increased.

Fig. 3 is a graphical report showing each morning the performance of each of the previous day's trains, both slow and fast freight, plotting the time on duty from called to relieved against the percentage of the full tonnage loading of the engine utilized. This gives the train master, road foreman of engines and superintendent a review of the preceding day's operations; and any falling away from the standards set up on the part of the subordinate officials whose duty it is to properly load the trains is quickly brought to light.

Each dot or circle represents a train, its position vertically indicating on the scale at the left the percentage of the full capacity of the engine utilized, and its position across the sheet, read from the scale of hours at the bottom, shows the time the train crew was on duty. The small circles represent east-bound trains and the dots west-bound trains. The extreme left-hand dot shows a west-bound train which was 99 per cent of the full adjusted-tonnage rating of the engine, and made the run over the division in 8 hrs. 12 min. from the time the crew were called to report for duty until they were relieved from duty at the opposite terminal. It includes initial and final terminal delay.

The average of all the circles is shown by the cross at A, and its position shows that the average of all the east-bound trains that day were loaded to 100 per cent and the average time was 10½ hours. The cross at B shows that the average loading of west-bound trains was also 100 per cent and the time just under 11½ hours. The characters near the left-hand margin indicate the class of engine hauling the west-bound trains, the number of cars being shown on the scale at the right, and the time from called to passing

out of the yard being read on the scale of hours at the bottom.

After keeping these daily sheets for several months, the location of all the crosses may be recorded on a sheet of tracing cloth, or a composite of all the small circles may be made on one tracing, and through the center of gravity of all the dots a curve may be drawn. This will show for any point on the curve the average time for the trains corresponding to that tonnage loading. These curves are shown in Fig. 4.

The Most Economical Train Loading

The curves in Fig. 4 having been prepared, the data shown in Table I may be calculated. Column 1 gives the percentage of engine loading, from 120 per cent down to

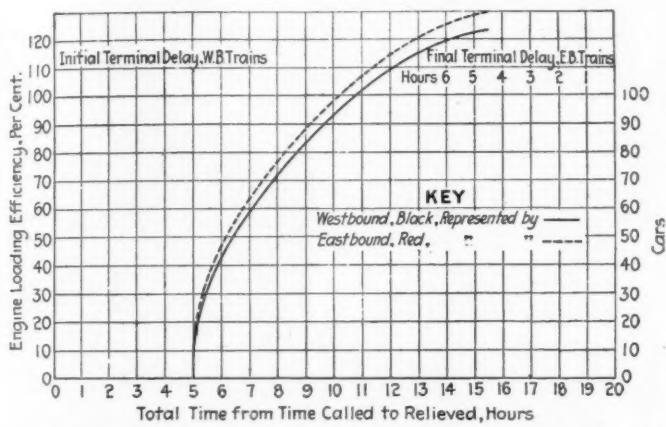


Fig. 4—Effect of Tonnage on Time Crew Is on Duty

80 per cent. The average flat tons in the east-bound and west-bound trains having been recorded each day on the sheets shown in Fig. 3 and the percentage of the engine loading being also available for each day, a summary may be run up at the end of the month and a comparison drawn as to the number of flat tons per train which would corre-

tions per train in column 2 and the result recorded in column 4. The same process is followed to obtain the figure at the top of column 5 as explained for column 4 and as there will usually be the same number of east-bound and west-bound trains in order to avoid running power and crews light, the tonnage per east-bound train will be found by dividing the total tons to be moved per day by the trains per day shown in column 4 and the results recorded in column 5. The total time on duty for the crews in making a round trip is shown in column 8. It has been determined that on the division under consideration, engines are off the road and in the hands of the motive power department about 24 hours for every round trip they make. Consequently, 24 hours should be added to the times shown in column 8 to give the total time of an engine for a round trip as in column 9. The number of round trips made in column 4, multiplied by the number of hours per round trip in column 9 will give the total number of engine hours shown in column 10, and these figures, divided by 24 hours in the day, will give the number of engines assigned to the service as recorded in column 11.

As the average distance run by these trains is 128.2 miles and the overtime speed basis is now $12\frac{1}{2}$ miles per hour, the time per trip is $10\frac{1}{4}$ hours and for the round trip $20\frac{1}{2}$ hours. Consequently, the overtime per round trip is found by subtracting $20\frac{1}{2}$ from the times shown in column 8, and the result entered in column 12. We now pay time and a half time for overtime in freight-train service, therefore the number of hours shown in column 12 multiplied by $1\frac{1}{2}$ gives the overtime hours for which we have to pay at the regular hourly rates, and these figures are entered in column 13. Multiplying by the number of trains per day in column 4, we have the total number of punitive overtime hours per day shown in column 14. The total wages paid to the engine and train crews in slow freight service and with the class of engine under discussion now amounts to \$3.975 per hour, and the figures in column 14 multiplied by this sum gives the total overtime cost per day as shown in column 15. The straight-time hours per day is the product of the $20\frac{1}{2}$ hours for one round trip times the number of trips in column 4

TABLE I—METHOD OF CALCULATING COST WITH VARIATIONS IN TRAIN LOADING

Per cent engine loading W.B.	Tons per train W.B. $2400 \times (1)$	No. of trains W.B., Curve $48000 \div (2)$	Tons per train, E.B. $140,000 \div (4)$	Per cent engine loading, E.B. $(5) \div 7000$	Time called to relieved, hours, E.B., Curve $(3) + (7)$	Time called to relieved, hours, E.B., Curve (8)	Total time of engine 1.R.T. (8) + 24 hours	Engine hours, (9) $\times (4)$	No. of engines required $(10) \div 24$	Overtime hr. per train R.T. $(8) - 20.5$	Punitive overtime, hr. per train R.T. $(12) \times 1\frac{1}{2}$ $(13) \times (4)$	Total punitive overtime, hr. per day $(13) \times (4)$	Overtime, total cost per day $(14) \times 3.975$	Straight time, hours per day $(4) \times 20\frac{1}{2}$	Straight time, cost per day $(16) \times 3.975$	Total wages cost per day $(15) + (17)$	Value of engines at 60c. per hour $(10) \times 0.60$	Total engine and wage cost per day $(18) + (19)$	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
120	2880	12.93	16,667	8400	120	14.18	27.11	51.11	851.85	35.49	6.61	9.92	165.34	657.23	341.67	1358.14	2015.36	511.11	2526.47
115	2760	12.11	17,391	8055	115	13.00	25.11	49.11	854.07	35.59	4.61	6.92	120.35	478.39	356.56	1417.17	1895.56	512.44	2408.00
110	2640	11.40	18,182	700	110	12.13	23.53	47.53	864.19	36.01	3.03	4.55	82.73	328.85	372.73	1481.60	1810.45	518.51	2328.96
105	2520	10.78	19,048	7350	105	11.41	22.19	46.19	879.83	36.66	1.69	2.54	48.38	192.31	390.48	1552.16	1744.47	527.90	2272.37
100	2400	10.21	20.00	7000	100	10.77	20.98	44.98	899.60	37.48	.48	.72	14.40	57.24	410.00	1629.75	1686.99	539.76	2226.75
95	2280	9.67	21,053	6650	95	10.19	19.86	43.86	923.38	38.47	... ...	...	...	...	431.59	1715.71	1715.71	554.03	2269.74
90	2160	9.16	22,222	6300	90	9.67	18.83	42.83	951.77	39.66	... ...	...	...	...	455.55	1810.81	1810.81	571.06	2381.87
85	2040	8.70	23,529	5950	85	9.18	17.98	41.98	987.75	41.16	... ...	...	...	...	486.34	1917.31	1917.31	592.65	2509.96
80	1920	8.26	25.00	5600	80	8.70	16.96	40.96	1024.00	42.67	... ...	...	...	...	512.50	2037.19	2037.19	614.40	2651.59

^a $2400 \times (1) = 2400$ multiplied by value in Column (1).

spond to a 100 per cent tonnage train. This has been shown for the west-bound trains at the head of column 2. This amount multiplied by the percentages in column 1 gives the tons per train in column 2. From the load-time curves in Fig. 4 may be read the average time for a west-bound train loaded to 120 per cent of the engine rating, etc., and these times recorded in column 3. The summary mentioned above will also show, by extension, the total gross tons moved each day, and the average of this figure is at the top of column 4. The number of trains which it would be necessary to run to move the average day's business may be found by dividing this number of tons by the proposed

and is shown in column 16. This at the rate of \$3.975 per hour gives the total straight time cost per day shown in column 17, and adding the overtime cost in column 15 gives the total wages cost per day in column 18.

Modern Mikado locomotives of the size under consideration are worth \$47,750 apiece, and taking interest at 6 per cent, depreciation at 4 per cent and insurance and taxes together at 1 per cent, we have fixed charges of \$5,256 per locomotive per year, or \$14.40 per day or 60 cents per hour. Column 19 shows the value of the engine hours in column 10 and the sum of the wages cost in column 18 gives the total engine and wage cost shown in column 20. It will be

noted that this cost is a minimum at 100 per cent loading. The limits are rather narrow and an error of 10 per cent in overloading or underloading would cause a loss of \$100 per day or \$3,000 per month on the amount of business handled on the division under consideration.

This method of working out the most economical tonnage for loading the freight engines of any division is based on actual practicable performance in everyday operation. The treatment considers the value of the locomotive, taking account of interest, depreciation and taxes; the relationship between straight-time and overtime rates for road crews; the quickening up of the time of the trains by a reduction of tonnage and the increase of the time the crews are on duty by an increase in tonnage. When these matters have been studied in the light of the recorded facts, we are in a position to answer the question, Are the engines properly loaded?

Are the Engines Properly Used?

So far as the motive power department is concerned it is important to have reliable reports which present promptly to the responsible operating officers, on the succeeding day if possible, all the pertinent facts concerning the performance of the locomotives available. These reports should cover not only the utilization made of the serviceable locomotives but also of all those laid off for repairs, both in the roundhouses and the back shops. The more promptly the work is done the more engines will be available for service and the smaller will be the number required to be purchased and to bear interest and depreciation charges. To this end the facilities at the engine terminals should be ample to inspect the incoming locomotives and send the reports to the dispatcher, who can at once call a crew in case the engine has only light work which can be completed by the time the crew reports.

The fire-cleaning pits and facilities for handling ashes, coal, sand and water should be in duplicate at important points. At one well-known freight-engine terminal it is possible to clean the fires and prepare for service 400 locomotives per day. Hot-water systems for washing and filling boilers save time, and drop tables or unwheeling hoists should be provided for handling driving wheels, spring rigging and driving-box repairs. Ample jib or overhead cranes should be installed in all important enginehouses, as the rods, pumps, pistons, smokebox fronts, etc., of modern locomotives are now so heavy that mechanical appliances must be used to reduce the cost of handling and save time in running repairs. The enginehouse referred to above at times furnishes the power for ten eastbound trains in two hours and at the same time ten to fifteen engines an hour for westbound trains. An operation of this magnitude requires close supervision in order to avoid waste of power and loss in efficiency.

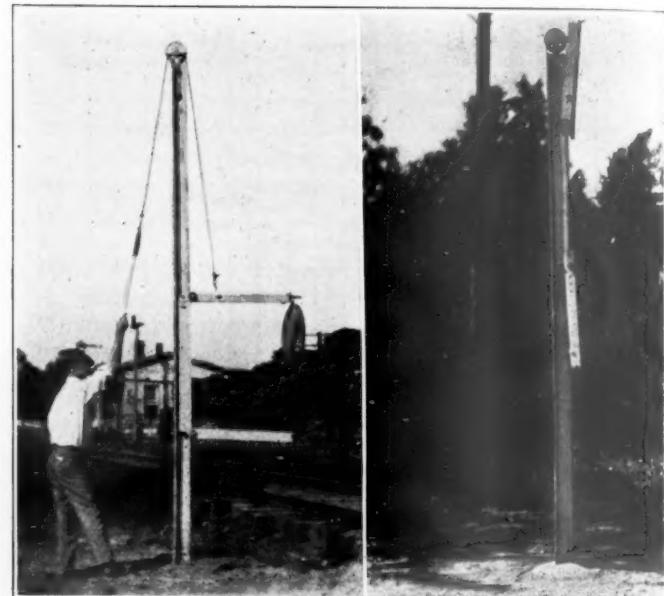
(The remainder of Mr. Elmer's paper, which deals with the utilization of cars, will appear in a later issue.—EDITOR.)

A Recent Development in Mail Cranes

UNDER THE NAME of the "White Heron" mail crane, there has recently been developed a type of crane for use on railroads which embodies a number of unusual features in the construction and operation of equipment of this character. A particularly prominent feature of this device is the absence of the familiar ladder as a part of the construction. The crane consists simply of a length of scrap rail which extends vertically from the ground beside the track and carries two pouch arms so arranged as to collapse against the vertical standard when the pouch is released and so attached to the rail and connected with a cable as to permit of their being projected from the vertical standard for the receipt or delivery of the sack.

For the latter purpose, each of the two sack arms is attached to a collar which fits the rail section, the two col-

lars in turn being fastened together by a plate which fits over the head of the rail and maintains them, one below the other, at the proper distance apart for the mail pouch. Each of these collars is also provided with a lug to prevent the lower pouch arm from being raised above the horizontal position and to prevent the upper arm from falling below this position. Each arm is made of a strip of metal bent U-shaped with the open end pin-connected to the collars. The arrangement of these arms and the collars is such that, aside from holding the pouch securely in position by reason of the tendency of the upper arm, on the one hand, to raise to the vertical position because of the weight of the lower arm, transmitted as it is through the metal plate connecting the collars, and the tendency, on the other hand, of the lower arm to drop from gravity, these arms assume a



Raising the Mail Pouch to Delivery Position

Position of Crane Arms After Delivery

position against the vertical standard immediately upon the release of the sack.

As shown in the illustration, the arms are lowered to permit of attaching the mail pouch from the ground level, in the one case, and raised to the proper position for the delivery of the mail pouch to the mail train, in the other case, by means of a cable passing over a pulley fixed to the top of the vertical standard and extending down to a point where it may be slipped over a bolt in the rail and padlocked. Each arm has a delivery hook which is attached in such a way that, in the case of the top arm, the hook shifts slightly downward as well as horizontally and in the case of the lower arm, the hook shifts slightly upward, thus providing for such a converging movement of the two hooks as will facilitate the removal of the sack and reduce the strain to a minimum.

This crane has been approved by the government railway mail service and one is said to be giving satisfactory service at Bovina, Miss., on the Alabama & Vicksburg, where the mail is picked up at speeds ranging from 30 to 50 miles an hour. Among the points mentioned in its favor, aside from the absence of any ladder or platform and the facility with which the mail pouch may be removed, are the inexpensive but dependable nature of the construction, the clearance it affords to traffic and its independence of vibration from trains from the fact that it is erected on the ground rather than on the ties. T. A. White, Oklahoma City, Okla., and T. M. Heron, Vicksburg, Miss., are the inventors, jointly, of the device.

Wage Statistics for July on New Basis

Number of Classes Increased from 68 to 148—Number of Employees in July 22 Per Cent Less Than Year Before

THE INTERSTATE COMMERCE COMMISSION has issued its summary of monthly reports of employees, service and compensation for Class I steam roads, including 13 switching and terminal companies, for the month of July, which gives the first official figures on the earnings and service of railroad employees under the wage reduction order of the Railroad Labor Board which became effective on July 1. It also represents the first summary compiled by the commission under the new rules governing the classification of steam railway employees, which were designed to meet the needs of both the Labor Board and the commission and under which the number of reporting divisions or classes has been increased from 68 to 148 and an analysis of the hours of service and compensation has been introduced. The quarterly statement on this subject, heretofore published, is discontinued and comparison of the old and new statistics is necessarily impaired. The increased number of classes does not result from a mere subdivision of the classes used in the old form, but is the outgrowth of an exhaustive classification study conducted by the Labor Board.

The total number of employees in service at the middle of the month was 1,634,872, as compared with 2,111,280 in July, 1920, a reduction of 476,408, or 22 per cent. In June, 1921, the number was 1,586,872. The falling off in traffic this year as compared with last year is also reflected in a reduction in the number of hours and days worked, although the statistics on this point are not comparable. The total compensation for the month was \$214,339,385, which gives an average of \$131 for the month, for the employees in service at the middle of the month, although all did not work full time.

Average Earnings by Classes

The average earnings and time worked per employee are given by classes as follows:

Reporting division	Time worked per employee (days or hours)			Total earnings per employee
	Straight	Over-	time	
1. Executives, general officers, and assistants...D	25	*		\$523
2. Division officers, assistants, and staff assistants...D	27	*		322
3. Architectural, chemical, and engineering assistants (A)...D	25	*		236
4. Architectural, chemical, and engineering assistants (B)...D	25	*		185
5. Subprofessional engineering and laboratory assistants...D	24	*		144
6. Professional and subprofessional legal assistants...D	25	..		166
7. Supervisory or chief clerks (major departments)...D	25	*		225
8. Chief clerks (minor departments) and assistant chief clerks and supervising cashiers...D	25	*		177
9. Clerks and clerical specialists (A)...D	185	3		151
10. Clerks (B)...D	189	4		125
11. Clerks (C)...D	187	6		104
12. Mechanical devices operators (office)...D	169	1		106
13. Stenographers and secretaries (A)...D	185	*		147
14. Stenographers and typists (B)...D	176	*		114
15. Storekeepers, sales agents, and buyers...D	202	3		159
16. Ticket agents and assistant ticket agents...D	216	9		166
17. Traveling auditors or accountants...D	25	*		199
18. Telephone switchboard operators and office assistants...D	179	2		76
19. Messengers and office boys...D	24	*		62
20. Elevator operators and other office attendants...D	207	7		86
21. Lieutenants and sergeants of police...D	29	*		170
22. Patrolmen...D	254	4		143
23. Watchmen (without police authority)...D	231	14		106
24. Supervising traffic agents...D	25	..		294
25. Traffic agents, advertising and development agents...D	25	*		213
26. Fire prevention, smoke, and time-service inspectors, and office building superintendents...D	26	*		181
27. Claim agents and claim investigators...D	24	*		204
28. Real estate and tax agents and investigators...D	25	..		206
29. Examiners, instructors, and special investigators...D	26	*		99
				100.

WASHINGTON, D. C.

Reporting division	Time worked per employee (days or hours)	Straight	Over-time	Total earnings per employee
30. Miscellaneous trades workers (other than plumbers).....	184	3		136
31. Motor vehicle and motor car operators.....	196	6		104
32. Teamsters and stablemen.....	186	7		119
33. Janitors and cleaners.....	195	7		77
34. Roadmasters and general foremen (M. of W. & S.).....D	27	*		244
35. Assistant general foremen (M. of W. & S.)...D	27	*		197
36. Supervising maintenance of way inspectors and scale inspectors.....	202	2		188
37. Maintenance of way inspectors.....	200	3		175
38. Bridge and building gang foremen (skilled labor, M. of W. & S.).....	191	4		163
39. Bridge and building carpenters.....	186	6		138
40. Bridge and building ironworkers.....	188	2		114
41. Bridge and building painters.....	194	6		149
42. Masons, bricklayers, plasterers, and plumbers.....	192	5		96
43. Skilled trades helpers (M. of W. & S.).....	180	4		80
44. Regular apprentices (M. of W. & S.).....	194	23		158
45. Portable steam equipment operators (M. of W. & S.).....	190	32		108
46. Portable steam equipment operator helpers (M. of W. & S.).....	237	5		85
47. Pumping equipment operators.....	200	11		127
48. Gang foremen (extra gang and work-train laborers).....	197	3		152
49. Gang foremen (bridge and building, signal and telegraph laborers).....	200	5		117
50. Gang or section foremen.....	192	9		77
51. Laborers (extra gang and work-train).....	195	4		74
52. Track and roadway section laborers.....	190	5		77
53. Maintenance of way laborers (other than track and roadway) and gardeners and farmers.....	193	6		126
54. General foremen and supervising inspectors (signal, telegraph, and electrical transmission).....D	26	*		238
55. Assistant general foremen (signal, telegraph, and electrical transmission) and signal and telegraph instructors.....D	26	*		215
56. Gang foremen (signal and telegraph skilled trades labor).....	206	5		187
57. Signalmen and signal maintainers.....	196	11		160
58. Linemen and groundmen.....	201	4		159
59. Assistant signalmen and assistant signal maintainers.....	193	6		126
60. Signalmen and signal maintainers helpers.....	192	5		107
61. General foremen (M. E.).....D	27	*		290
62. Assistant general foremen and department foremen (M. E.).....D	25	*		257
63. General foremen (stores).....D	25	*		170
64. Assistant general foremen (stores).....D	23	*		159
65. Equipment, shop, and electrical inspectors (M. E.).....D	26	*		202
66. Material and supplies inspectors.....D	25	*		168
67. Gang foremen and gang leaders (skilled labor).....	217	6		217
68. Blacksmiths.....	180	4		148
69. Boilermakers.....	180	15		162
70. Carmen (A).....	184	9		154
71. Carmen (B).....	178	2		141
72. Carmen (C).....	188	11		149
73. Carmen (D).....	185	1		138
74. Electrical workers (A).....	193	17		170
75. Electrical workers (B).....	209	19		167
76. Electrical workers (C).....	171	17		130
77. Machinists.....	182	13		159
78. Molders.....	163	1		128
79. Sheet-metal workers.....	183	12		157
80. Skilled trades helpers (M. E. and Stores).....	185	14		115
81. Helper apprentices (M. E. and Stores).....	180	4		111
82. Regular apprentices (M. E. and Stores).....	176	2		80
83. Gang foremen laborers (shops, enginehouses, power plants, and stores).....	204	10		129
84. Coach cleaners.....	204	21		95
85. Laborers (shops, enginehouses, power plants, and stores).....	214	11		94
86. Common laborers (shops, enginehouses, power plants, and stores).....	190	5		82
87. Stationary engineers (steam).....	222	15		157
88. Stationary firemen and cilers (steam and electrical plants).....	214	20		130
89. Coal passers and water tenders (steam station boiler rooms).....	213	21		114
90. Chief train dispatchers, train dispatchers, and train directors.....	211	*		256
91. Station agents (supervisory—major stations—nontelegraphers).....D	29	*		241
92. Station agents (supervisory—smaller stations—nontelegraphers).....	217	9		161
93. Station agents (nonsupervisory—smaller stations—nontelegraphers).....	204	8		97
94. Station agents (telegraphers and telephoners).....	213	18		144
95. Chief telegraphers and telephoners or wire chiefs.....	220	12		188
96. Clerk-telegraphers and clerk-telephoners.....	222	10		139
97. Telegraphers, telephoners, and towermen.....	224	8		144
98. Station masters and assistants.....D	30	*		187
99. Supervising baggage agents.....D	29	*		166
100. Baggage agents and assistants.....	225	16		135

Reporting division		Time worked per employee (days or hours)	Total earnings per employee
		Straight time	Overtime
101.	Baggage, parcel room, and station attendants..	222	8 103
102.	General foremen (freight stations, warehouses, grain elevators, and docks).....	199	10 165
103.	Assistant general foremen (freight stations, warehouses, grain elevators, and docks).....	194	8 146
104.	Gang foremen (freight station, warehouse, grain elevator, and dock labor).....	201	10 135
105.	Callers, loaders, scalers, sealers, and perishable freight inspectors.....	180	4 96
106.	Truckers (stations, warehouses, and platforms).....	194	4 91
107.	Laborers (coal and ore docks and grain elevators).....	181	17 102
108.	Common laborers (stations, warehouses, platforms and grain elevators).....	191	9 84
109.	Stewards, restaurant and lodging-house managers, and dining car supervisors.....	236	10 151
110.	Chefs and first cooks (dining cars and restaurants).....	237	12 133
111.	Second and third cooks (dining cars and restaurants).....	235	11 94
112.	Waiters and lodging-house attendants.....	238	10 64
113.	Camp and crew cooks and kitchen helpers.....	226	12 74
114.	Barge, lighter, and gasoline launch officers and workers	254	17 146
115.	Deck officers (ferryboats and towing vessels).....	230	10 199
116.	Engine-room officers (ferryboats and towing vessels)	224	10 197
117.	Deck and engine-room workers (ferryboats and towing vessels).....	227	8 127
118.	Deck and engine-room officers and workers (steamers)	255	5 91
119.	Floating equipment shore workers and attendants	229	8 115
120.	Transportation and dining service inspectors..D	26	* 196
121.	Parlor and sleeping car conductors.....	266	9 161
122.	Train attendants.....	225	8 96
123.	Bridge operators and helpers.....	249	4 114
124.	Crossing and bridge flagmen and gatemen ..D	30	* 78
125.	Foremen (laundry) and laundry workers.....	197	4 86
126.	Yardmasters and assistants.....	28	* 258
127.	Switch tenders.....	230	1 129
128.	Outside hostlers.....	228	6 168
129.	Inside hostlers	221	8 147
130.	Outside hostler helpers.....	222	7 128
131.	Road passenger conductors.....	189	18 233
132.	Assistant road passenger conductors and ticket collectors	165	50 198
133.	Road freight conductors (through freight).....	182	23 167
134.	Road freight conductors (local and way freight).....	202	46 218
135.	Road passenger baggagemen.....	196	20 176
136.	Road passenger brakemen and flagmen.....	182	16 156
137.	Road freight brakemen and flagmen (through freight)	165	21 119
138.	Road freight brakemen and flagmen (local and way freight)	193	45 163
139.	Yard conductors and yard foremen.....	210	5 176
140.	Yard brakemen and yard helpers.....	190	4 146
141.	Road passenger engineers and motormen.....	172	17 250
142.	Road freight engineers and motormen (through freight)	168	23 190
143.	Road freight engineers and motormen (local and way freight)	195	58 251
144.	Yard engineers and motormen.....	205	7 184
145.	Road passenger firemen and helpers.....	166	16 180
146.	Road freight firemen and helpers (through freight)	153	21 129
147.	Road freight firemen and helpers (local and way freight)	193	49 183
148.	Yard firemen and helpers.....	197	6 136

*Less than one day or hour.

In an explanatory note the commission says:

This July statement has been delayed owing to the necessity of investigating many inconsistencies in the carriers' reports, but

such delay with the initial report was to be expected in view of the detailed nature of the schedules.

It will be noted that the *number of employees* in each class is given in two columns. The number at middle of month represents the count of the employees in service on a particular day, including those on vacation or sick leave, and all subject to call for duty whether actually at work on the day of the count or not. The number of full-time positions, in classes other than those in train and engine service, represents the number of employees required to man the service if each employee worked the full number of days or hours of the regular assignment and in addition such an average amount of overtime as is shown by the summary for each occupation. In the case of train and engine service, the number of men required to perform the work, if there were no sick leave, vacations, or "extra" men, is more nearly represented by an average of the four counts of men actually on duty during the month.

The term *straight time* refers to the time of the regular assignment as distinguished from overtime. Overtime is in some cases paid for at the same rate per hour as for straight time, and in other cases, a higher, or so-called *punitive rate*, is paid. It may be noted that in some reporting divisions the statistics show a lower rate per hour for overtime than for straight time. In the cases of passenger engineers and passenger firemen this is explained principally by the fact that for such employees 5 hours represent a basic day while overtime is computed at one-eighth of the daily rate.

It will be observed that the forms do not distinguish the overtime hours actually worked from the overtime hours paid for, although straight time actually worked is shown separately. This is explained by the desirability of reducing the number of columns to a minimum. In the classes relating to train and engine service, there is a separate column for straight time paid for, the reporting of which, however, to save clerical expenses, is not required for road freight employees.

This information can be approximated for these employees by dividing the total miles paid for by 12.5, since under the dual system of miles and hours, the pay for eight hours is equal to the pay for 100 miles.

Column 7, in reporting divisions not relating to train service, represents *time paid for and not worked* and includes such items as payment for holidays, absence on definite leave and vacations. In train service, column 7 relates to the *constructive hours* paid for which do not represent actual train service and for which mileage is not allowed. Such "constructive hours" should not be taken as equivalent to time paid for and not worked, as they frequently represent some additional service.

The columns relating to overtime and time paid for and not worked are not regarded as applicable to general and division officers. The straight time reported in such cases generally represents the regular number of working days in the month.

For a fuller explanation of the terms used, reference should be made to the printed rules and classification.

Preceding the summary of the number of employees, their service, and compensation as reported, there are presented certain averages based on the summary. These show the average straight time, average overtime, and average total compensation per employee per month. These averages are based on the number of employees shown in column 2 of the summary. If the number of full time positions were used as a divisor, the time as well as the earnings per man would be in most cases considerably increased.

The report also gives a recapitulation by groups of employees and a detailed statement showing for each reporting

RECAPITULATION BY GROUPS OF EMPLOYEES

	Employees		Hours or days		Compensation				
	Number of employees	Number of full time positions	Straight time actually worked	Overtime paid for	Straight time compensation	Overtime compensation	All other compensation	Total compensation	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	
I.	Executives, officials and staff assistants..D	15,155	15,078	394,471	31	\$6,317,228	\$278	\$37,046	\$6,354,552
II.	Professional, clerical and general ..D	47,178	46,030	1,175,927	7,866	8,029,388	38,181	257,455	8,325,024
III.	Maintenance of way and structures ..D	226,342	213,326	42,858,026	938,476	24,838,568	544,285	2,031,213	27,414,066
IV.	Maintenance of equipment and stores ..D	4,604	4,591	123,117	228	1,080,326	1,508	6,018	1,087,852
V.	Transportation (other than train, engine and yard) ..D	14,451	14,259	72,125,852	1,894,215	31,500,139	941,072	68,839	32,510,050
VI (a).	Transportation (yardmasters, switch tenders, and hostlers) ..D	436,555	407,938	82,972,133	4,798,005	50,841,657	3,980,266	1,266,933	56,088,856
VI (b).	Transportation (train and engine) ..H	27,465	27,125	816,552	13,833	2,663,850	36,996	15,710	2,716,556
	All employees ..H	181,326	176,568	38,316,942	1,523,517	20,636,077	972,207	259,956	21,868,240
	Total number of employees and compensation.	1,634,872	1,535,375	.....	.....	\$192,059,134	\$12,039,154	\$10,241,097	\$214,339,385

D—Daily basis. H—Hourly basis. *Average of four counts made per month of men actually working.

division the number of employees, straight time actually worked, overtime paid for at pro rata rates and at punitive rates, time paid for but not worked, and the compensation paid for straight time, pro rate overtime and punitive overtime and for time not worked. The recapitulation is given at the bottom of the opposite page.

For the group of transportation employees there is a separate table showing some additional information. The number of employees varied from 249,002 on the 7th of the month to 252,158 on the 28th, while the number in service at the middle of the month was 289,383. The

straight time actually worked was 53,005,499 hours and the straight time paid for (not including road freight employees) was 33,101,312 hours. The overtime paid for was 5,589,533 hours and the constructive allowances 1,449,918 hours, making a total of 63,709,133 service hours. The grand total compensation was \$50,339,739, which included \$38,849,058 for straight time actually worked, \$5,439,168 for overtime and \$1,031,168 for constructive allowances. The miles actually run were 503,807,261 and the miles paid for but not run were 80,831,300. The trips for which not less than a minimum day was paid were 6,248,163.

Labor Board Completes New Rules for Shop Crafts

Revised Provisions "More Elastic," According to Tribunal—
Effective December 1

THE remainder of the disputes between the carriers and their shop employees as to the working rules which are to supersede the provisions of the Shop Crafts' National Agreement have been disposed of by the Railroad Labor Board with the promulgation of numerous additional rules which are to be included in the agreements formed between the individual carriers and their shop employees. The new rules are effective December 1.

Some difficulty was experienced by the Board in preparing its decision. However, the following summary, including an abstract of the new provisions, was announced by the Board on November 29:

Decision effective December 1.

Number of men affected—about 400,000 employed at present—about 450,000 under normal traffic conditions.

Estimated saving to railroads—only actual operation can tell, but may reach \$50,000,000 per year.

Nature of decision—Revision of National Agreement.

(1) Rules are made more elastic to secure greater efficiency and economy.

(2) Many criticisms of the national agreement are met by the decision, but all the demands of the managements are not granted. Older rules sanctioned by experience are retained.

(3) The principle of collective bargaining and union recognition embodied in the Transportation Act is retained in the new rules, but representation of minorities in grievance cases is provided for, thus doing away with that part of national agreement criticized as forcing the "closed shop" on the railroads. This is more theoretically than actually important, as practically all shops are unionized and unions are recognized and represented by the men in the negotiations leading up to present decision.

The Board members believe the present decision the most important work of the Board to date. It is designed to provide a permanent code of shop rules to stabilize that part of railroad industry.

The Changes Ordered

A complete new set of rules and working conditions to supersede the provisions of the shop crafts National Agreement was announced by the Labor Board on December 1. These new rules are to be applied on all carriers and so constitute the restoration of the principle against which the carriers have been fighting for over a year, namely, the universal application of rules and working conditions regardless of varying local conditions. In general the new rules are those of the National Agreement revised in places to eliminate some of the more flagrant injustices pointed out by representatives of the carriers in the hearings which extended from January to April of this year.

The new overtime rules announced in the *Railway Age* of August 27 (page 419) and the seventeen rules promulgated by the board last October and announced in the *Railway Age* of October 22 (page 789) embody the most radical revisions

contained in this new "National Agreement." Of the 186 rules of the shop crafts agreement 99 are to be continued indefinitely, according to this decision.

Fourteen rules are eliminated, minor changes—principally in the wording—have been made in fourteen others, no mention is made of three of the old rules, one rule is promulgated and but 48 rules changed so as to eliminate specific injustices pointed out in the hearings or to make the rules more elastic. All of the qualification rules for the various classes of shop men, with the exception of a slight change in the case of electrical workers, have been retained in the new code. Similarly, the National Agreement rules relating to the classification and services of apprentices, the eligibility of helpers for promotion to helper apprentices and the differential rules for autogenous welders have been perpetuated. The rules relating to the duties of helpers and to the consist of wrecking crews have been modified but slightly.

Of the rules eliminated the most important is National Agreement Rule 24 relating to court duties of employees and expense therefor. Many of the changes made to meet the specific objections of the carriers are in the form of a slight alteration of the wording which will leave the rule open to even more interpretations than were the more specific rules of the old agreement. For instance, Rule 122 of the National Agreement reads "blacksmiths sent out on the road to do blacksmiths' work will be accompanied by helpers." The new rules simply add to the existing rule the words "when necessary."

On the other hand, several changes have been made which undoubtedly will result in better conditions. Rule 27, for instance, has been changed so that shop forces may be reduced to 40 hours per week before reductions in the force are made, a 48-hour notice being required. In the restoration of forces the regular hours must be restored before additional men are taken on.

Several of the rules have been changed to permit minority groups of employees or individuals the same rights as the employees or employee represented by an organization. Rules 37 and 38, which the carriers claimed made any system of discipline impossible, have been altered so as to give the railroads suspension privileges pending hearings, provided that if it is found that suspension was unmerited the employee will be reinstated with unimpaired seniority and pay for time lost.

Another important change included in the new code is contained in Rule 40 which creates three classes of apprentices—regular, helper and special. Provisions are made for three-year special apprenticeships for young men with technical school training. These apprentices, however, must be in-

cluded in the total number of apprentices in computing the ratio of apprentices to mechanics. Still another important change made in answer to the objections of the carriers is illustrated in Rules 32 and 33 which have been changed so that men at outlying points may be permitted to perform repair work or work other than that listed for their craft instead of necessitating the temporary transfer of an employee at heavy expense. Likewise the necessity for having six men do a simple piece of work which was formerly performed by one man is partly obviated by certain changes in the rules which state, for example, that a machinist can do any connecting or disconnecting of wires, couplings or pipes necessary to complete his task instead of waiting for another worker of another craft.

Some Changes for Economy

In general, the changes of this character in the rules are such as to make for more economical and efficient operation when compared with conditions as pictured by representatives of the carriers during the hearings, but the actual results which these changes will produce cannot be estimated until they have been in operation for some time. In its general instructions accompanying this new code the Board orders that its provisions shall apply on all carrier parties to the dispute except where an agreement has already been reached with the employees, in which case the rule agreed upon shall prevail.

Similarly the rules eliminated by the Board will terminate except where the carrier and the employees have already reached an agreement upon these points. The formulation of a preamble or caption to the new code is remanded to the carriers and their employees.

In the cases where the Board has failed either to eliminate the old rule or formulate a new rule the point is referred to the individual carriers and their own employees for further negotiation on the grounds that "the Labor Board believes that certain subject matters now regulated by the rules of the National Agreements may not be covered in all localities by rules of general application and require further consideration by the parties directly concerned." This constitutes the only recognition in the decision of the justice of the carriers' plea for consideration of the widely varying local conditions which cause uneconomical and inefficient situations when working rules are applied universally. The decision closes with the statement that those rules which are reproductions of similar rules in the National Agreement "are not to be understood as carrying with them the interpretations placed upon them by the Railroad Administration, by the Adjustment Boards or by other agencies acting under said administration."

Shopmen Ask for Increased Wages

While the carriers throughout the country are announcing proposed reductions in the wages of their employees and calling conferences with representatives of the various classes of workers in accord with the terms of the Transportation Act, the officers of the six shop crafts affiliated with the American Federation of Labor are preparing demands for wage increase of five cents an hour above the rates established by the Board in July, 1920, and 13 cents an hour above the existing rates of pay for shop employees. It is reported that these demands are to be presented to the executives of the individual carriers by the general chairmen of the organizations on each road when conferences are held on the proposal of the executives for a further wage reduction. The only explanation of this move, which appears to be solely strategical, is credited to B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, who stated that this increase was requested because "we feel that the Transportation Act allows us a living wage and rates equal to those paid in similar industries outside of the railroad shops."

Commission Asks Views on Common Officers and Directors

WASHINGTON, D. C.

A HEARING FOR the purpose of receiving views as to the interpretation of Paragraph 12 of Section 20-a of the interstate commerce act, which provides that no person shall hold the position of officer or director of more than one carrier, unless such holding shall have been authorized by the commission upon showing that neither public nor private interests shall be adversely affected thereby, was held at Washington before Commissioners Meyer, Eastman and Potter of the Interstate Commerce Commission on November 30. W. A. Colston, director of the commission's Bureau of Finance, said that the commission had formed no opinions on the subject, but as the law apparently gave the commission no standard, it desired to have a discussion of every phase of the subject. The bureau has made a study of the literature on the subject for the purpose of considering the various views that have been advanced as to the propriety of interlocking directors and officers.

Alfred P. Thom, counsel for the Association of Railway Executives, said that apparently the bureau had considered everything but the law, and he proposed to discuss that. He said the purpose of Congress was that men should not be exposed to improper temptations resulting from a duality of fiduciary relations, but that the commission is not charged with responsibility except where there is a conflict in such fiduciary relations. He did not think it was intended that the commission should inquire into the fitness of a man to hold the positions to which he had been elected or his ability to perform his duties as those things were the responsibility of the stockholders.

Commissioner Meyer asked whether in a case of a man who had been connected with various railroads and had caused trouble everywhere he went, the commission should not consider his personal character in passing on his application to hold more than one position. Mr. Thom said he thought that it was most important that the principle should be recognized that the commission's only responsibility was to ascertain whether the relationship between the carriers was such that a man holding positions with more than one road would be confronted with a hurtful conflict of fiduciary duty. Commissioner Potter asked whether in a doubtful case the commission should not be influenced by the well known integrity of a man to allow him to serve where it might not do so in another case. Mr. Thom insisted that the jurisdiction must be based on the relation between the carriers, and it follows, he said, that the commission has nothing to do under this section of the law with the relation of the individual to other financial institutions that are not carriers, particularly as that question is taken care of in another section of the law. In the case of a large railroad system, he said, whose common management is recognized as desirable, there is a presumption that common management ought to be allowed. In some cases, he said, the presumption is in favor of allowing common officers or directors, while in others the presumption is the other way, as, for example, where there is substantial competition between the carriers. But if the presumption is against common directors there may be other conditions which the commission may consider to justify authorization for the continuance of the practice.

The question was also discussed by R. S. Lovett, S. T. Bledsoe, Newman Erb and M. L. Bell.

Doubtless if we are to remain a creditor nation we must some day reverse our merchandise trade balance, for we cannot go on indefinitely selling abroad merchandise in so much greater amounts than can be offset by our purchases of foreign goods and services.—*Guaranty Survey*.

Prices Still Much Higher Than Railway Rates

Detailed Statistics for Over Thirty Years Show Freight Charges
Are Now Relatively Much Lower Than Commodity Prices

ARE RAILWAY freight rates too high? Practically everybody, including railway officers, will answer this question in the affirmative. But no rational conclusion can be drawn as to whether the rates charged for any service, or the prices charged for any commodity, are too high or too low unless they are measured by standards of recognized validity. The universally accepted standards for measuring the reasonableness of rail-

RELATION OF FREIGHT RATES TO WHOLESALE PRICES,
1890-1921

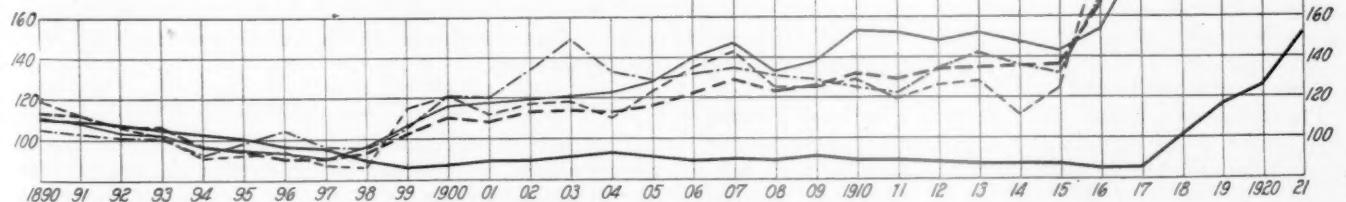
AVERAGE 1890-1899 = 100

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	Year
1890-99	100	100	100	100	100	100	100	100	100	100	100	1890
1890	110	110	112	114	105	119	111	110	111	110	113	1891
1891	109	122	116	111	103	112	108	104	110	109	112	1892
1892	107	112	104	109	101	106	103	103	106	106	106	1893
1893	104	108	110	107	100	101	102	100	105	106	106	1894
1894	102	96	100	96	92	91	96	90	100	100	96	1895
1895	100	93	95	93	98	92	94	88	96	94	94	1896
1896	96	78	84	91	104	94	93	93	94	91	90	1897
1897	95	85	88	91	96	87	90	94	90	92	90	1898
1898	89	96	94	93	95	86	96	107	92	92	93	1899
1899	86	100	98	97	105	115	106	111	95	98	102	1900
1900	87	110	104	107	121	121	116	116	106	110	110	1901
1901	89	117	106	101	120	112	117	115	111	107	108	1902
1902	89	131	111	102	134	117	119	114	112	114	113	1903
1903	91	119	107	107	149	118	121	113	113	114	114	1904
1904	93	126	107	110	133	110	123	110	112	112	113	1905
1905	91	124	109	112	129	123	128	109	109	113	116	1906
1906	89	124	113	120	132	135	140	101	111	121	122	1907
1907	90	137	118	127	135	143	147	110	118	127	129	1908
1908	89	133	121	117	131	125	133	119	114	120	123	1909
1909	91	153	125	120	129	125	138	112	112	126	126	1910
1910	89	165	129	124	125	129	153	117	112	133	132	1911
1911	89	162	131	120	122	119	152	120	111	131	129	1912
1912	88	171	140	121	134	126	148	123	114	133	134	1913
1913	87	164	137	124	142	128	152	124	118	137	135	1914
1914	87	169	141	122	136	111	147	125	117	136	135	1915
1915	87	172	142	124	132	124	143	141	117	136	136	1916
1916	85	200	173	159	169	189	153	197	136	164	167	1917
1917	85	310	241	224	249	266	188	245	170	212	238	1918
1918	101	361	259	296	231	232	229	274	231	264	265	1919
1919	116	384	288	324	246	206	292	222	278	297	286	1920
1920	125	358	323	374	338	238	468	260	432	323	328	1921*
July,	152	202	199	237	292	180	324	213	319	226	216	July,
1921	149	189	184	222	261	160	304	202	277	204	200	1921

*Average first six months, 1921.

Column 1—Index figures, average rate per ton per miles based on reports of the Interstate Commerce Commission.

Columns 2, 3, 4, 5, 6, 7, 8, 9, 10, 11—Index figures of the Bureau of Labor Statistics, Department of Labor, 1890-1913. (See page 499, 1913 Statistical Abstract of the United States.) Index figures, 1914-1920, same source. (See page 576, 1920 Statistical Abstract), converted to base 1890-99 = 100. Index figure first six months 1921 Bureau of Labor Statistics.



Relation of Average Freight Rate to Average Wholesale Prices of Fuel and Lighting, Metals and Implements, Lumber and Building Materials and All Commodities. Average 1890-1899=100.

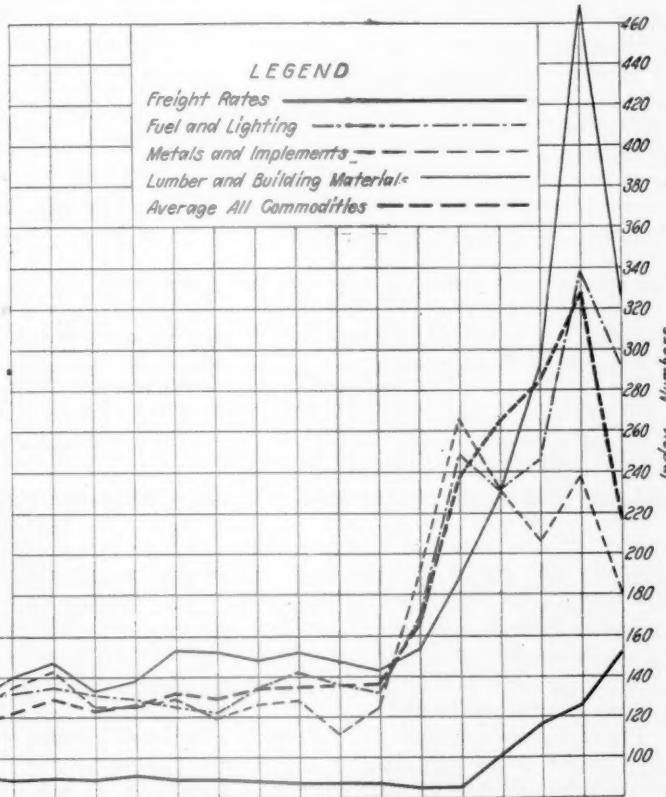
way rates are, first, what it costs the railway under efficient operation to render the service for which the rates are charged, and, secondly, what the shippers and receivers of the commodity transported can afford to pay for its transportation.

The Interstate Commerce Commission has announced that

it will soon begin a general investigation to determine whether, and to what extent, if any, further reductions in railway rates are justified. It is very doubtful if any witness who appears before the commission will claim that the present operating costs of the railways are so low as to justify substantial reductions in the rates on any commodity or class of commodities. Several important proceedings for reductions of rates have been begun before the commission. It has rendered decisions in some of these cases. In every instance the most important data and arguments presented by those asking reductions have been intended to show that the rates should be reduced because they impose an undue burden on business.

But why do they impose an undue burden? Because, as is claimed, the rates are so high in proportion to the prices that producers can get for their commodities that the shippers cannot afford to pay them. In other words, the contention really is that the great reductions in the prices of most commodities which have occurred since 1920 have made it impossible for most commodities to "bear" the present rates.

What evidence is there that most commodities, at the prices at which they are now selling, cannot "bear" the



present rates? Practically the only evidence introduced in support of this proposition is, first, that the traffic of the railways has greatly declined since 1920, and, secondly, that the present rates of the railways are relatively much higher in proportion to the prices of most commodities than they were immediately before and in the years immediately fol-

lowing the commencement of the war in Europe. Because there has been a heavy decline of railway business since 1920 it is constantly charged that the present rates have "killed" the traffic. But the best measure of what rate any commodity can bear is the price for which it sells. Therefore, the question whether the rates have become higher than the traffic can bear is, in substance, equivalent to the question whether rates have been advanced too much in proportion to the market prices of commodities.

As already indicated, most persons in discussing this question compare the differences between the present railway rates and the rates charged in the years from 1913 to 1917 with the differences between the present prices of commodities and the prices that commodities commanded in the years 1913 to 1917. If these comparisons are fair and reasonable, the present railway rates are too high in proportion to the present prices of commodities. The average railway rate per ton per mile is now only about 75 per cent higher than it was in the years from 1913 to 1917. On the other hand, the average wholesale price of all commodities is now only about 50 per cent higher than in 1913, although somewhat lower than in 1917.

Why Compare "Pre-War" Rates and Prices?

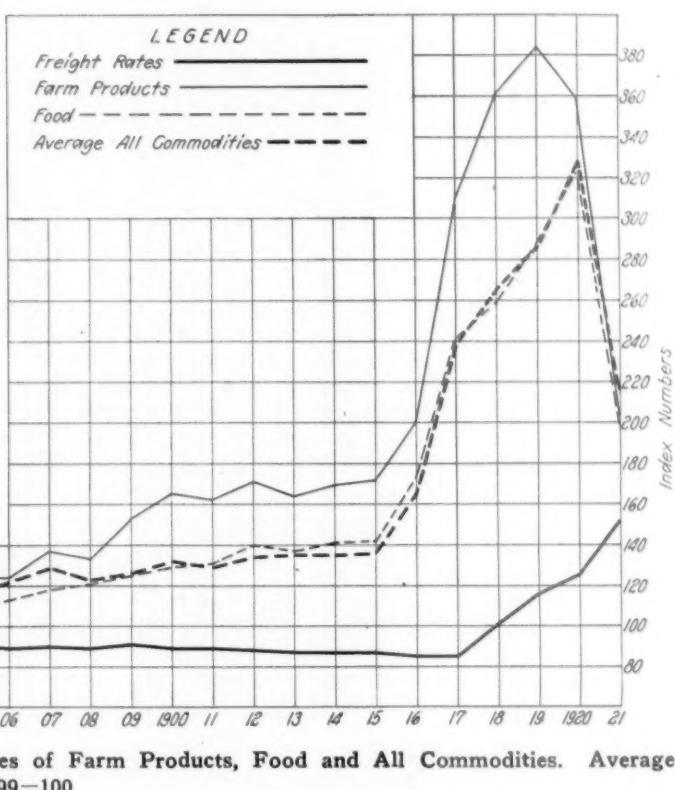
But why compare the railway rates and the prices of the year 1921 with the rates and prices of 1917, or even 1913, to determine whether the general level of railway rates is reasonable at present compared with the general level of commodity prices? Where is the evidence that the rates the railways were allowed to charge from 1913 to 1917 were fair and reasonable in proportion to the prices of commodities in those years? If in those years the rates were unreasonably low compared with the prices of commodities, it necessarily follows, of course, that between those years and the year 1921 the rates should have been advanced more than prices, and that rates should at present be higher relatively to prices than they were in 1917 or 1913.

Now, as a matter of fact, the railways from the year 1910 to 1917 never admitted that the rates they were permitted to charge were reasonable in proportion to the prices of com-

modities, the wages of labor, etc., during that period. On the contrary, the railways constantly contended during that period that their rates were relatively too low. They tried to secure a general advance in 1910. They tried again to secure a general advance in 1914. They tried again to secure a general advance in 1917.

Furthermore, in 1914 the Interstate Commerce Commission in the 5 per cent rate case specifically held that the rates of the railways in eastern territory were too low. Again in 1917 it held that the rates of the railways in eastern territory were too low. The railways in eastern territory handle practically half the traffic of the country. Therefore in 1914, and again in 1917, the Interstate Commerce Commission specifically held that the rates charged on half the traffic of the country were too low.

Both the contentions made by the railways at that time and the decisions of the commission show the unfairness of any assumption that the relationship between railway rates and commodity prices in any year from 1910 to 1917 was



modities, the wages of labor, etc., during that period. On the contrary, the railways constantly contended during that period that their rates were relatively too low. They tried to secure a general advance in 1910. They tried again to secure a general advance in 1914. They tried again to secure a general advance in 1917.

Furthermore, in 1914 the Interstate Commerce Commission in the 5 per cent rate case specifically held that the rates of the railways in eastern territory were too low. Again in 1917 it held that the rates of the railways in eastern territory were too low. The railways in eastern territory handle practically half the traffic of the country. Therefore in 1914, and again in 1917, the Interstate Commerce Commission specifically held that the rates charged on half the traffic of the country were too low.

Both the contentions made by the railways at that time and the decisions of the commission show the unfairness of any assumption that the relationship between railway rates and commodity prices in any year from 1910 to 1917 was

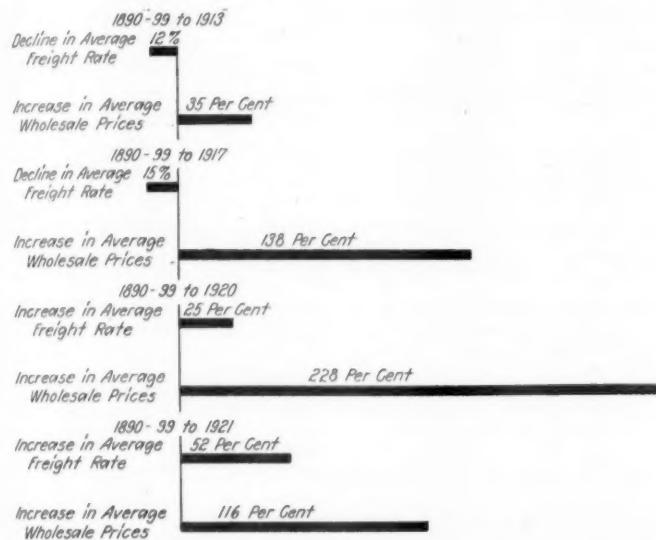
changes in rates and prices which have occurred since 1917, or even since 1913, just before the war in Europe began, but to consider the changes in rates and in commodity prices which began long prior to 1913 and have continued up to the present time.

Rates Declined, Prices Advanced, Before 1913

Fortunately, official data for making these comparisons are available. A measure of the changes in railway rates as a whole which have occurred is afforded by the changes which have occurred in the average receipts per ton per mile. The average receipts per ton per mile are a "weighted average" of all the rates charged, and we have statistics of the Interstate Commerce Commission showing average receipts per ton per mile since 1888. Furthermore, the Bureau of Labor Statistics has compiled average wholesale prices of nine large groups of commodities for all years from 1890 down to the present time. The statistics of the Bureau of Labor regarding changes in wholesale prices formerly were

based upon average prices in the ten-year period 1890 to 1899, inclusive. The average prices of those ten years were taken as 100 per cent. Subsequently, the Bureau of Labor took the average prices of the year 1913, the year before the Great War began in Europe, as a basis, and its statistics regarding prices since then have been based upon the prices of 1913. It is a comparatively simple matter to put its figures for the years since 1913 on the same basis as those for the preceding years.

This has been done in the accompanying table, entitled "Relation of Freight Rates to Wholesale Prices." This table shows the changes in average wholesale prices which have occurred in the years from 1890 to 1921, the average prices of the ten years 1890-1899 being taken as 100 per cent. The table also shows in Column 1 the changes which have occurred in average railway rates, the average receipts per ton per mile in the ten years 1890-1899 being also taken as 100 per cent. The graphs showing the changes in average rates and in average prices which are presented herewith are based upon this table, and they show even more strikingly



Increases and Decreases in Average Freight Rates Compared with Increases in Average Wholesale Prices All Commodities from Average for Period 1890-1899 to 1913, 1917, 1920 and First Six Months of 1921

than the table the comparative changes in average railway rates and average prices which have taken place in a period of over 30 years.

The table and the graphs both show that the average railway rate per ton per mile declined in every year from 1890 to 1899. The wholesale prices of most commodities also declined from 1890 to about 1897. From that time on the average railway rate per ton per mile showed a generally downward tendency, although there were occasional fluctuations upward. From 1898 onward the general tendency of wholesale prices of commodities was always upward.

It was in 1910 that the railways first sought to make a general advance in rates. At that time the average rate per ton per mile was 11 per cent less than it had averaged in the years 1890-1899. On the other hand, the average wholesale price of all commodities had increased 32 per cent. The cost of fuel and lighting had increased 25 per cent, that of lumber and building materials 53 per cent, and that of metals and implements 29 per cent. The railways being large purchasers of fuel, lumber and metals, the advances in the prices of these things had appreciably affected their operating expenses. But this was not the main thing that affected their expenses. The prices of foodstuffs had increased 29 per cent, those of cloths and clothing 24 per cent,

and those of house furnishings 12 per cent. These advances in prices, as well as some others, had increased the cost of living of railway employees and brought about great movements for advances in wages which had been successful. It was these advances in wages, which were indirectly forced upon the railways by the increases in commodity prices in general, that most unfavorably affected their operating expenses.

The railways were unsuccessful in their efforts to secure the advances in rates asked for in 1910. On the contrary, their average rates per ton per mile continued to decline. In 1913 their average rate was 13 per cent less than in 1890-1899, while average prices of all commodities had advanced 35 per cent higher. These facts show clearly why it is utterly unfair to take the average rates and the average prices of 1913 as a starting point in discussing the average rates and the average prices of the year 1921. The average wholesale price of farm products had increased 64 per cent since 1890-1899, while the average railway rate had declined 13 per cent. Did the farmer have any moral right permanently to benefit from a relationship between railway rates and prices of farm products which resulted from a 13 per cent decline in the former and a 64 per cent advance in the latter? The average price of lumber and building materials had advanced 52 per cent. Where did the producers and shippers of lumber and building materials get any right, moral or economic, after railway rates had declined 13 per cent and their prices had advanced 52 per cent, to claim that the relationship between railway rates and prices established by these changes was a fair and normal relationship and should be perpetuated? And yet all arguments and deductions which are based on comparisons of the railway rates and prices which prevailed immediately before the beginning of the war in Europe are predicated on the indefensible assumption that the relations which then existed between railway rates and prices were fair and normal relations.

Prices Up 165 Per Cent Before

All Rates Were Advanced

It was subsequent to the year 1913, however, as the table and the illustrations show, that the most extraordinary divergences of railway rates and commodity prices occurred. In the year 1917, the last before government control of railways was adopted, the average railway rate was 15 per cent less than in the period 1890-1899. On the other hand, the average wholesale price of all commodities showed an increase of 138 per cent, farm products had increased 210 per cent, metals and implements 166 per cent, and fuel and lighting 149 per cent. It was not until 1918, when the total increase in average wholesale prices had been 165 per cent, that a general advance in rates applying to all the railways of the country finally was made. The next and final general advance in rates was made in 1920. In that year average prices reached the highest point ever attained, being 228 per cent higher than the average for 1890-1899. The prices of farm products had increased 258 per cent, and the prices of lumber and building materials 368 per cent.

What is the final result at the present time in the year 1921 of all the changes, both increases and decreases, which have occurred in average rates and average prices? The curves in the graphs end with figures showing the comparative position of railway rates and prices in the first six months of 1921. The bottom row of figures in the table show where average rates and prices had arrived in July, 1921, the latest time for which the various statistics are available. The average railway freight rate was then 49 per cent more than the average for the years 1890-1899. At the same time, in spite of the great decline in prices within the last year, the average wholesale price of all commodities was still 100 per cent higher than in 1890-1899. The aver-

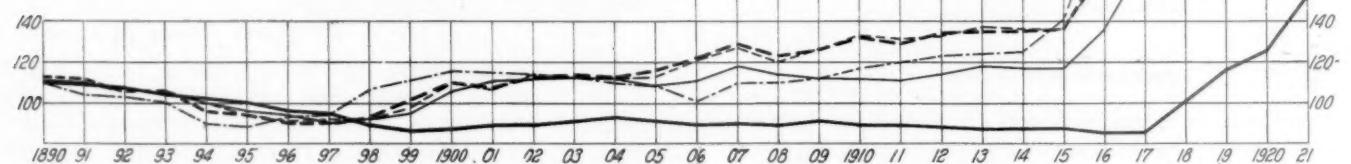
age price of farm products was still up 89 per cent, of fuel and lighting 161 per cent, and of lumber and building materials 204 per cent. At the present time the average railway rate is lower, compared with the average railway rate of 1890-1899, than is the average price of any large group of commodities compared with the average price of the same period. To state the matter in another way, at the present prices of commodities the producer or owner of almost any commodity can buy far more railway freight transportation with any given amount of that commodity than he could have bought with it at the average prices of 1890-1899.

Prices 76 Per Cent Higher Than in

1910—Rates Only 65 Per Cent

Perhaps objection will be made to going back to 1890-1899 to get a starting point for comparing increases in railway rates and commodity prices. Let us, then, compare the relationship between average rates and prices in a later period of ten years with the present relationship between them. Never in any decade in history did the traffic of the railways increase relatively faster than in the ten years from 1900 to 1910. The total increase in freight traffic between those years was over 80 per cent. This shows conclusively not only that the relationship between rates and prices during that period was such that the traffic could easily bear the rates charged, but that it was highly conducive to the development of the industry of the country and the traffic of the railways. How much higher, then, are average railway rates and average wholesale prices at the present time than they were on the average in this ten years from 1900 to 1910? *The average railway freight rate in July was 65½ per cent higher than it was then, while the average wholesale price of commodities was 76 per cent higher.* In other words, relatively to wholesale prices the average railway freight rate is today substantially lower than it was when the industry of the country was developing and the traffic

percentage higher than it was then while the railway rate is a certain other and larger percentage higher. But all reasoning of this kind is unfair and fallacious, and of all the conclusions to which it leads the most fallacious is the conclusion that commodities at present prices cannot bear the present rates. Unquestionably, as a result of the horizontal percentage advances in rates which have been made within recent years, there are rates which are higher than the traffic easily can bear. Unquestionably, also, there ought to be some general reductions of rates if first the operating costs of the railways can be correspondingly reduced. But, taken as a whole, the present scale of freight rates is relatively low compared with the present general scale of commodity prices, and, taking rates as a whole, there is abso-



Relation of the Average Freight Rate to Average Wholesale Prices of Drugs and Chemicals, House Furnishings, Miscellaneous Commodities and All Commodities. Average 1890-1899=100.

of the railways was growing as rapidly as was ever known.

The data given demonstrate beyond all question that, on the whole, the railway rates of this country are now relatively lower as compared with the prices of commodities than they were until there began a few years before the commencement of the Great War in Europe the general advance in prices which had attained considerable momentum speed even before the war began, and which, before the present railway rates were fixed, had carried average prices 228 per cent higher than they were in the years from 1890-1899.

Why, then, is there so much complaint that rates are now too high in proportion to prices, and that the traffic cannot bear them? This complaint is entirely due to the fact that prior to a little over a year ago prices for years had been increasing more than railway rates, and that, in consequence, in a long period of years producers and shippers became accustomed to doing business on rates which had become extremely low compared with prices. When producers and shippers now complain about the relations between rates and prices they usually say that in 1913 or 1916, or some year prior to 1918, the price they received for their commodity was a certain amount and the railway rate on it was a certain amount, and that now the price is only a certain

lately no justification for contending that they are too high in proportion to prices in general.

Why the Farmer Is Suffering

The greatest complaints about the present railway rates come from the farmers. The statistics and graphic charts presented herewith reveal some very interesting facts regarding the situation in which the farmer finds himself. They show that for years he benefited by very great increases in his prices, which were accompanied by actual reductions in rates, and that his present prices are relatively much higher than the present average railway rate. On the other hand, the average prices of all other classes of commodities, except foodstuffs of which the farmer himself is the principal producer, and of metals and implements, are relatively higher, and in the cases of fuel and lighting and of lumber and building materials, relatively much higher, than the prices of farm products. In other words, while the farmer is making the loudest complaints about the railway rates he has to pay, every other class of producers in the country is charging him relatively higher prices for the commodities they sell him than the railways are charging him for the transportation service that they render him.

ay rate
But all
l of all
s is the
ot bear
he hori-
n made
er than
e ought
operating
1. But,
is rela-
of com-
s abso-

420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
21

Index Numbers

Miscel-

rates
charts
gards-
They
ses in
ns in
higher
hand,
except
pro-
gher,
and
prices
mak-
as to
rging
sell
spor-

Commission Orders General Rate Inquiry

Railroads Propose Present Relief for Agriculture, Followed by Further Reductions When Wages Are Cut

WASHINGTON, D. C.

THE Interstate Commerce Commission on November 23 ordered an investigation "to determine whether and to what extent, if any, further general reductions in the rates, fares and charges of carriers by railroad applicable in interstate or foreign commerce can lawfully be required by order or orders of the commission under Section 1 or other provisions of the interstate commerce act, upon any commodities or descriptions of traffic." And on November 29 the commission amended its order by adding at the end the following: "and also to determine what will constitute a fair return from and after March 1, 1922, under Section 15-a (3) of the interstate commerce act." The provision in the law providing for a 5½ per cent return expires on that date and the commission is directed to state the percentage to apply from that time.

All carriers by railroad subject to the interstate commerce act were made respondents to this proceeding, the state authorities were notified and the proceeding was assigned for hearing at Washington on December 14.

The order of the commission was issued on its own motion, but it was in accordance with a request made in a petition filed on the same day by the Association of Railway Executives asking also for a reopening of the case in which the commission ordered reductions in the rates on grain, grain products and hay in the Western and Mountain-Pacific districts and for permission to put into effect as a substitute a general 10 per cent reduction in rates on agricultural products, as proposed in the resolution adopted by the roads at the meeting in New York on November 16. The only explanation given by the commission was the following statement:

The commission has acted recently in two litigated proceedings looking to general reductions in rates.

The first was based on complaint by producers of live-stock and confined to rates in the western district. The reductions recommended became effective in September. Various applications for modification or extension of the findings were argued on November 8.

The second was an investigation instituted in July into the rates on hay and grain in the western district. Many state commissions intervened. The findings are reported in 64 I. C. C., 85. An order thereunder, effective December 27, on five days' notice, was served on November 21. Meantime, petitions have been filed by representatives of various interests asking the institution of investigations, more or less general in scope, with a view to effecting reductions in rates on various descriptions of traffic, and the carriers have indicated their intention to effect immediate reduction of 10 per cent in the rates in all districts on designated products of the farm and the ranch.

All petitions have received careful consideration, but it has seemed to the commission that its investigation should not be confined to any particular descriptions of traffic and should be distinct from and without prejudice to proceedings on complaint already filed or hereafter to be filed. The order now issued is intended to elicit whatever information may be lacking as a guide for the commission in its further action, and is along lines under consideration by the commission for some time past.

The proposal of the railroads is to give some assistance at this time to the agricultural industry as most deserving of relief and to make further reductions on other commodities as soon as further reductions are made possible by the proposed wage reduction in such manner as the commission may determine. This is in accordance with the resolution adopted by the executives when the wage cut was proposed.

The hearing is expected to give the railroads an opportunity to contend that the commission under the law cannot under present conditions order general reductions in rates except on the theory that the reductions would so stimulate traffic as to increase earnings instead of reduce them, but

that if and when further reductions are to be made they should be made on those commodities which the commission may select as entitled to precedence. It is also likely to afford a field day to the representatives of shippers who are demanding rate reductions. It is believed also that some general pronouncement of policy by the commission may result which will remove much of the uncertainty which now exists and which in many cases is causing the withholding of orders in the hope that rates will soon be reduced.

The railroad petition in the grain case asked:

1. For approval of a program for the relief of agriculture in all sections of the United States through the medium of a reduction in carload rates on the following products of agriculture and products of animals, namely: wheat, corn, oats, other grain, flour and meal, hay, straw and alfalfa, unmanufactured tobacco, cotton, cotton seed and products, except cotton seed oil and cotton seed meal, citrus fruits, other fresh fruits, potatoes, other fresh vegetables, dried fruits and vegetables, horses and mules, cattle and calves, sheep and goats, hogs, poultry, eggs, butter and cheese, and wool, as set forth and more specifically described in the resolution of the Association of Railway Executives, adopted on November 16, 1921.

2. For special permission to make effective said reduction in freight rates on the commodities named as soon as may be and upon one day's notice.

3. For an order re-opening this proceeding and the order herein entered on the 21st day of November, 1921, and for a reconsideration thereof to determine whether the findings therein affecting the Western District, insofar as they are inconsistent with the general program for the relief of agriculture in all sections of the United States above mentioned, should be modified and for a modification thereof.

4. For an order instituting an investigation to determine whether, until a substantial reduction can be secured in the labor and other costs of operation of these petitioners, any further reduction in rates can be lawfully required or, with due regard to the transportation industry, is possible.

The statements made in support of the petition were:

A Plan for the Relief of Agriculture

That the delay in putting into effect the reduction suggested by this Honorable Commission in its report in this case has been due to a diligent effort on the part of these petitioners to mature a plan for the relief of agriculture in all sections of the United States, more comprehensive than that embraced in this single proceeding.

In view of the difficulty and magnitude of the problem, of the many and diverse interests involved, and of the necessity for agreement and co-ordination among carriers differently situated in relation to the problem, the delay which has occurred will, the carriers trust, be fully appreciated and understood by this Honorable Commission.

There was and is an insistent demand from many sources for a reduction in rates. The demand is for a general reduction and embraces not only the rates on the commodities above mentioned but on practically all other commodities. In considering this demand and desiring to deal with it in a sympathetic and helpful manner, it was necessary for the carriers to consider the conditions which bear a substantial, and in many respects a controlling, relation to the subject. It was necessary to consider carefully the revenue conditions of the carriers themselves, because, entirely aside from the interest and rights of the owners of the properties, the carriers sustain so important a relationship to the public welfare and are so essential to the service of the public that it was necessary for them to consider how far anything that might be proposed would impair their capacity to perform their public service, and it was accordingly necessary for them to give careful consideration to the effect of any proposal upon their operating revenues.

Railway Income Still Inadequate

The result of operations of the Class I roads for the calendar year 1920 was a net railway operating income of about 62 mil-

lions of dollars as against a normal in other years of more than 900 millions, and even this amount of 62 millions included back mail pay received from the government for prior years of approximately 64 millions, thus showing, when the operations of that year alone are considered, an actual deficit before making any allowance for either interest or dividends.

The interest requirements of these roads amounted for that year to approximately 475 millions of dollars.

The corresponding result of operations of the carriers showed, for the calendar year 1920, in the Western, Eastern and Southern districts respectively, the following net railway operating income:

Western	\$118,970,768
Eastern (including Pocahontas Region)	77,475,261 (deficit)
Southern	20,768,914

For the first nine months of the calendar year 1921, the net railway operating income of the Class I roads, taken as a whole, amounted to \$391,384,719, being only 2.9 per cent of the value of their properties as determined by this Honorable Commission, in July, 1920, for the purposes of rate-making, in a proceeding entitled "Ex Parte 74."

The corresponding results of operation of the carriers in the several districts, Western, Eastern and Southern, showed for said period of nine months the following net railway operating income, namely:

	Rate earned (annual basis) per cent
Western	3.4
Eastern (including Pocahontas Region)	2.7
Southern	1.9

The foregoing were the operating results notwithstanding the fact that the carriers as a whole were compelled to reduce their expenditures for maintenance of way and equipment for the said nine months' period \$426,793,121 below what was expended for these purposes during the corresponding period of nine months of the previous year; the reduction in such expenditures in the several districts being as follows:

Western	\$178,357,201
Eastern	208,349,365
Southern	40,086,555

The policy of rigid economy made necessary by these results, and the consequent cutting to the bone of the upkeep and maintenance of the properties, was at the price of neglecting, and for the time deferring, work which must hereafter and in the near future be done and paid for.

The condition of postponed maintenance is illustrated by the fact that, as of September, 1921, over 16 per cent, or 374,431 in number, of freight cars were in bad order needing repairs, as against a normal of bad order cars of 160,000.

From the foregoing it is apparent that the figures of operating results as shown by the reports, are unduly large to the extent that they take no note of the enormous bills charged up against the future, and which must soon be paid, for deferred maintenance.

It is obvious that, even under these circumstances of omitted and deferred maintenance, the rate of return of 5½ or 6 per cent, fixed by the Transportation Act for the first two years after March first, 1920, has not been even approximated—much less reached, the actual result being less than one-half of the prescribed return.

This unhappy and discouraging result has been largely brought about by the expenses of operation, and in analyzing these it will be found that by far the largest contributing cause is the labor cost.

Labor Cost

Labor costs constitute three-fifths or more of the expenses of operation.

On the first day of January, 1917, when the government took charge of wages in the Adamson Act, the labor cost of Class I carriers had not in any year exceeded the sum of about 1,468 millions of dollars. In 1920, when governmental authority made the last wage increase, the labor cost of these carriers was about 3,698 millions for the year, or, if continued throughout the year instead of for only eight months during which the wage increases were in effect, the labor cost, on the annual basis, would have been largely in excess of 3,900 millions of dollars.

In the light of these figures, it is manifest that the recent

reduction by the Labor Board of wages, estimated at from 10 to 12 per cent, in no sense meets or solves the problem of labor costs, and in no way makes it possible for the carriers to afford a reduction in their revenues.

Notwithstanding this, however, the carriers have, since the rate increase in Ex Parte 74, made many hundreds of thousands of reductions in freight rates, these reductions having resulted, according to the best estimates which can be made from available data to a reduction in the revenue of the carriers amounting to from 175 millions to 200 millions of dollars a year on the basis of normal business.

It is obvious, from the opposition of shippers to a level of rates which is not now sufficiently high to provide for the labor and other costs of operation and to afford even a moderate support to the transportation industry, that these costs impose upon transportation a burden substantially greater than it can bear.

The only practical method of obtaining relief from these excessive labor costs is through an order of the Labor Board which can be rendered only after a hearing of the parties.

In a wise administration of the responsibilities of management, it was necessary for the facts herein enumerated to be borne in mind and carefully weighed in forming a judgment as to the duty of the carriers in respect to the demand for a reduction in rates.

Rate Reductions Unwarranted

Until Costs Are Lowered

From the foregoing general outline of the circumstances of the carriers it is clearly apparent that, without a substantial reduction in costs, the transportation industry is in no condition to afford any reduction whatever in its revenues.

It is urged, however, that a reduction in rates will stimulate traffic and that increased traffic will protect the carriers from loss growing out of the reduction in rates. It was the duty of the carriers to give respectful and earnest consideration to this suggestion. It is, of course, manifest that it has no basis except a basis of conjecture, and that an adverse result of the experiment would be disastrous not only to the railroads but to the public whose supreme need is adequate transportation. There can be no escape from the conclusion that it is a serious question, whether the railroad managements should venture voluntarily to place these instrumentalities of commerce, so essential to the public welfare, at the hazard of such an experiment.

It is, however, represented to them that the wheels of industrial activity in all branches of business have been slowed down to a point which brings depression and distress to the entire public and that something must in the public interest be done to start them again in motion. It is urged that some interest must take the risk of the first step to relieve the industrial congestion which is holding business back and down, and the railroads are urged to take this first step, and to rely upon public opinion to bring about promptly the necessary reduction in operating costs, including a just reduction in the abnormally high cost of labor.

It is represented to the carriers that the only just method is to apply horizontally any reduction that is made so that all users of transportation may share equitably and alike in the advantage incident to a reduction of rates, and the precedent of the horizontal increase in rates made in Ex Parte 74 is cited to justify this demand.

An Economic Problem

It seems, however, to your petitioners that the situations then and now are substantially different. Then the problem was a revenue problem—a problem of producing revenue sufficient to support transportation up to the standard of efficiency deemed necessary in the public interest, and, manifestly, it was equitable and proper to distribute ratably the incidental burden.

Now the problem is to find a means of aiding in a vast economic readjustment, and to relieve serious economic distress—not as a right, but as a matter of high and wise expediency and in a way that will best promote the public welfare.

Inasmuch as there is no opportunity or possibility of giving relief to all, there should, in the judgment of your petitioners, and it is believed in the disinterested judgment of the public, be a resort to wise selection, and whatever is done shou'd be

applied where it will bring the greatest relief and do the most good, considering the question from the broad standpoint of the advantage and interest of the general public.

In considering the economic needs of the various classes of industry, it is represented to your petitioners, and they believe it to be true, that the deflation since the war in the prices of agricultural products to the producers has been greater by far than in any other industry. This decline has not been confined to any particular agricultural products or to any particular section of the country, but is general, resulting primarily from two major causes—the condition of foreign credit and the condition of domestic markets. These conditions constitute a serious obstacle to the resumption of normal activities and it is not believed by your petitioners that the present agricultural depression is caused to any appreciable degree by the existing level of freight rates, or would be relieved to any substantial extent by any reduction in such rates that can be made.

But the demand for a reduction in freight rates on the products of the farm is most insistent and it seems to be a matter of general concession that no industry is as much in need of a reduction in its expenses as agriculture.

This Honorable Commission, in its recent report in this cause, at page 99, although dealing with only a portion of the country, and with reductions on only a part of the agricultural products, thus stated the situation: (Here is quoted an extract from the commission's opinion in the grain case.)

The carriers do not feel justified in remaining rigid and uncooperative in the face of this suggestion and of a public demand which is so insistent and so extensive as to amount, for all practical purposes, to a fixed public opinion.

Present Reduction Should Not Be Concentrated on Western Grain

Your petitioners, however, submit that, if there is to be a reduction in rates for the benefit of agriculture, there seems little justification for confining such reductions to rates on grain, grain products and hay, nor to any particular section of the country. The economic reasons in favor of reductions apply with equal force to other products of the farm and to other territorial sections. The demand on the part of the agricultural public for a reduction in freight rates is not confined to the commodities covered by this proceeding and is not confined to the Western District. The commission and the carriers have been, or will be, confronted by the necessity of meeting the demand for a wider application among agricultural products of proposed reductions and for a more extensive territorial application of them. It is not apparent how this demand can be successfully distinguished from the action taken by the commission in this cause, and yet a general application of the scale of reductions ordered in this case to other agricultural products and to other territories of production, would involve a loss of revenue to the carriers which would seriously impair their capacity to perform their public obligations.

Actuated by these considerations, the railroads represented by the Association of Railway Executives, which include the respondents in this cause, being desirous of manifesting a sympathetic attitude toward the public demand for a reduction in rates and of making a substantial contribution to the relief of existing industrial congestion and depression, and to the economic readjustment essential in the public interest, and at the same time realizing the serious and disastrous consequences of a failure of the experiment they are about to make, not only to the railroads themselves but to the public dependent upon them for the means of transportation and for the facilities of doing business, have determined to ask this Honorable Commission for leave to put into effect as promptly as may be, the following program:

"1. A reduction, for an experimental period of six months, of 10 per cent in car load rates on wheat, corn, oats, other grain, flour and meal, hay, straw and alfalfa, unmanufactured tobacco, cotton, cottonseed and products except cottonseed oil and cottonseed meal, citrus fruits, other fresh fruits, potatoes, other fresh vegetables, dried fruits and vegetables, horses and mules, cattle and calves, sheep and goats, hogs, poultry, eggs, butter and cheese, and wool, any reduction in such rates made since September 1, 1920, to constitute a part of this 10 per cent; it being understood that the proposed reduction of 10 per cent shall not apply to the movement of such traffic wholly within New England, and that if the reduction of

wages, referred to in the next succeeding paragraph hereof, is put into effect prior to the expiration of the said experimental period, this limitation of six months shall not apply to the said reduction in rates. It should be noted that the loss of revenue resulting from this reduction would all come out of the net revenue of the carriers.

"2. The necessary steps under the law, including, in case of failure to agree in conference, an application to the United States Railroad Labor Board, to be filed as promptly as possible, for a reduction in wages of employees, with the understanding that, concurrently with such reduction in wages, the benefit of the reduction thus obtained shall, in a manner approved by this Honorable Commission, be passed on to the public in the reduction of existing railroad rates, except in so far as such reductions in rates shall have been made in the meantime."

The reason for the exclusion of traffic moving wholly within New England, from the benefit of the immediate reduction proposed in rates, is due to the special distress of the New England carriers.

Further Reductions to Be Determined by Commission

It will be noted that the effect of this proposal will be an immediate reduction in car load rates on the products of agriculture and the products of animals which are mentioned, but, as soon as and to the extent that a reduction in wages is obtained from the Labor Board on the proposed application, a further reduction in rates (except as meanwhile put into effect), to be distributed among the users of transportation in such manner as this Honorable Commission may determine.

The proposal thus deals immediately, and without waiting for a reduction in operating costs, in the manner stated, with the needs of agriculture and undertakes to make further reductions not confined to agriculture as soon as further reductions are made possible by the proposed reduction in wages.

Your petitioners, in view of the condition and of the special needs of the transportation industry do not believe that any further reductions in rates than those herein mentioned, should be made until there is a reduction in operating costs. They further submit that there is no justification for treating grain, grain products and hay preferentially or for giving special and preferred advantage to the territory covered by the order in this cause, and that the measure of reduction recently ordered by this Honorable Commission can not be extended to the other products of agriculture or throughout the country without serious injury and hardship to the transportation industry.

Your petitioners, therefore, respectfully ask for an inquiry by this Honorable Commission to ascertain whether, until a substantial reduction can be secured in the labor and other costs of operation, any further reduction in rates than that herein proposed can lawfully be required, or with due regard to the transportation industry, is possible, and that meanwhile a rehearing be ordered in this cause, that meanwhile the order in this cause be suspended and, that meanwhile permission may be given to your petitioners to make effective on one day's notice the proposed 10 per cent reduction in freight rates on the commodities and under the conditions set out in this petition.

The petition was filed by J. N. Davis, Fred H. Wood, Kenneth F. Burgess and Alfred P. Thom.

Program for Rate Hearing

The commission on November 28 gave out the following outline of the plan of procedure and the subjects to be considered at the hearings beginning on December 14:

The purpose of this hearing is to elicit facts. Therefore the submission of evidence is not to be preceded by an argument or debate on questions of law or of policy. Of course, at the close of the hearing opportunity will be afforded for argument, at which time questions of law as applied to the facts of record may be discussed.

During the period December 14 to 21, inclusive, it is expected that the respondents will put in their case. Hearing will be resumed on January 9 and past experience has shown that full development of the facts will be facilitated if cross-examination of respondents' witnesses is deferred until then. Before the close of the hearing on December

21 a schedule for the hearing on and after January 9, 1922, will be announced. This will be arranged according to commodities, etc., etc. Interested parties should advise the Secretary of the amount of time desired to present their case.

The hearing will be continued until adequate opportunity has been afforded for the presentation of such matters as in the opinion of the commission may aid it in determining the questions before it, but every effort will be made to expedite the proceeding and to confine the evidence within reasonable time limits. Relationships between particular points under existing rates are not in issue.

It is suggested that the matters to be presented should include the following:

1. Are the present rates* reasonable in the aggregate under section 1 or other provisions of the act either in the country as a whole, or in the several territorial rate groups** defined in Ex Parte 74. Are the rates on specified commodities or descriptions of traffic reasonable? If not, to what extent are they unreasonable? This of course includes passenger traffic.

2. To what extent are the respondents realizing return contemplated by section 15a and what are the prospects for the future? This should be shown by individual lines, by territorial rate groups, and by classification territories.

3. To what extent have operating expenses been reduced since August 31, 1920:

- (a) By furlough or discharge of employees?
- (b) By reduction in wages?
- (c) By changes in working conditions?

Same questions as to operating expenses since June 30, 1921. State as in 2.

What part, if any, of this decrease has not been included in the monthly reports of operating expenses made to the commission since June 30, 1921?

4. (a) How do fuel contracts and costs now current compare with those in effect on August 31, 1920 (give the figures)? When do such contracts expire? To what extent are contract prices conditioned on wage scales? What part of the cost of fuel is for transportation?

(b) The same questions as to locomotives, cars, rails, ties and other materials and supplies.

5. To what extent have rates been (a) further increased and (b) reduced since general increase of 1920? This should be shown by individual lines, by territorial rate groups and by classification territories.

6. (a) What increase in gross and net operating revenues,

*For brevity the term "rates" is used throughout, as including fares and other transportation charges.

**References hereinafter to territorial rate groups are to those defined in Ex Parte 74.

absolutely and on a percentage basis, resulted from the increases authorized in Ex Parte 74?

(b) What decrease in gross and net operating revenues (1) has resulted and (2) may be expected to result from reduced rates which have become effective since August 25, 1920? State separately.

(c) What changes have there been in the volume of traffic since August 31, 1920, and what are the prospects for the future? What has been the effect of rate changes upon the volume of traffic since that date?

7. What readjustments, if any, following *Increased Rates*, 1920, have not been but should be effected? The commission there said:

"It is impracticable at this time to adjust all of the rates on individual commodities. The rates to be established on the basis hereinbefore approved must necessarily be subject to such readjustments as the facts may warrant. It is conceded by the carriers that readjustments will be necessary. It is expected that the shippers will take these matters up in the first instance with the carriers, and the latter will be expected to deal promptly and effectively therewith to the end that necessary readjustments may be made in as many instances as practicable without appeal to us."

These matters should be gone into thoroughly.

8. To what extent, if any, has maintenance of road and equipment been curtailed since August 31, 1920? What is the present condition of road and equipment?

9. What amounts have been expended since August 31, 1920, for additions and betterments, including equipment, which, under the prescribed accounting system, are chargeable to capital account? What amounts are needed or will be needed in the immediate future for such expenditures, in the public interest, based (a) on present volume of traffic, and (b) on volume of traffic under normal conditions?

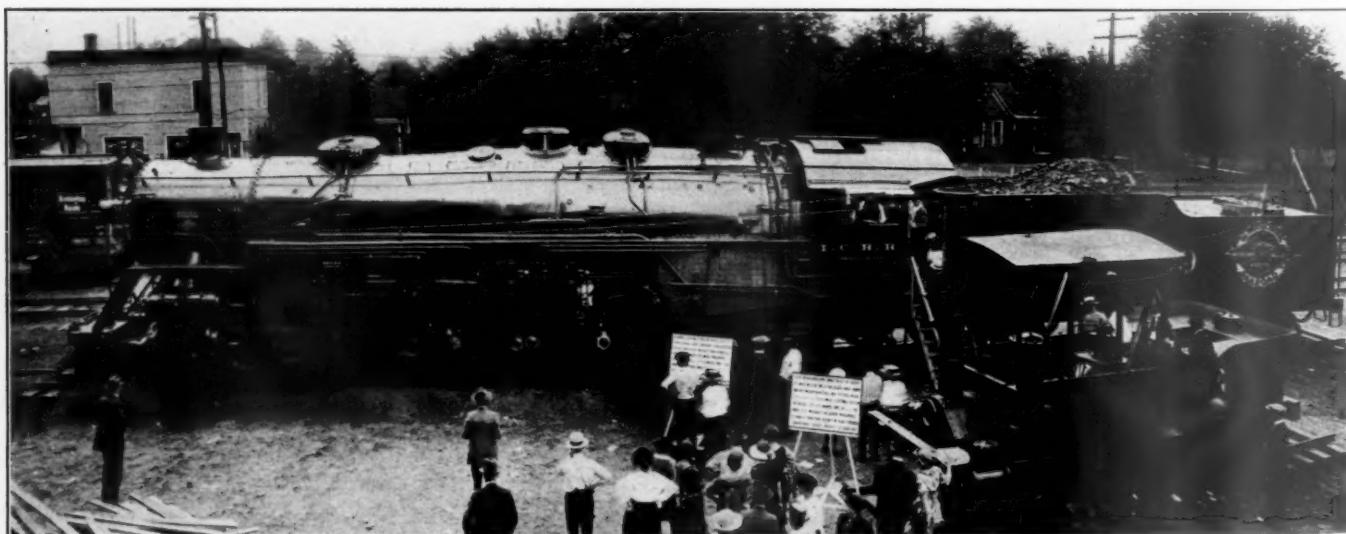
10. What are the relative degrees of profitability of the freight and passenger services, respectively?

11. To what extent can net income be increased by enhanced economy and efficiency in management?

12. If rates are found to be unreasonable in the aggregate in the country as a whole, or in one or more territorial rate groups, (a) should a general reduction in all rates be required or, (b) should readjustment be required in the rates on specified commodities or descriptions of traffic?

If rates are found to be reasonable in the aggregate, but unreasonable on specified commodities or descriptions of traffic, what readjustment should be required?

13. What should be the rate of return after March 1, 1922?



The Illinois Central's First Locomotive and One of Its Latest



Through Delaware Water Gap

Lackawanna Success the Result of Supervision

Details of the Handling of Coal and Manifest Freight—
Train 51—Full Use Made of Signals

By Charles W. Foss and James G. Lyne

Part II

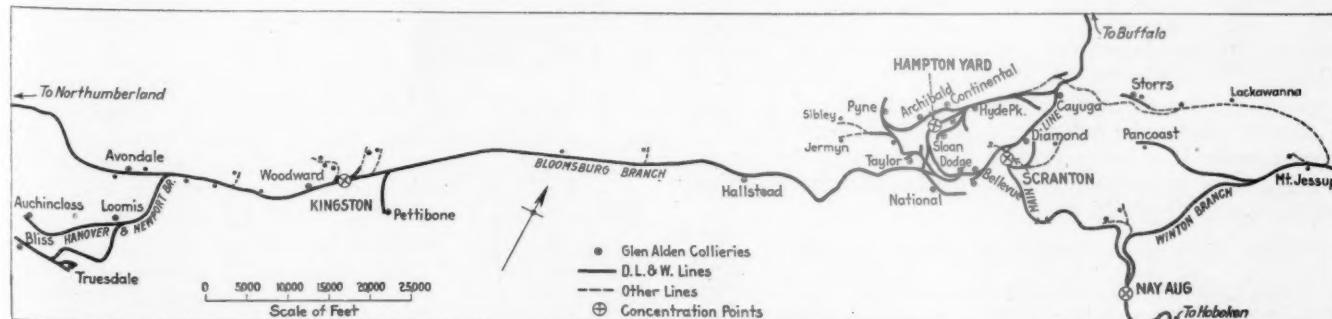
TECHNICALLY SPEAKING, the Lackawanna serves the Northern or Wyoming anthracite field. The mines or breakers are in a small area in the neighborhood of Scranton, Pa., and extend in a narrow strip southwesterly from Scranton along the Bloomsburg branch, the mine farthest from Scranton being at West Nanticoke, about 25 miles from Scranton. Various of the older mines are within the city limits of Scranton itself; in fact, the mine cave-ins, and the resulting damages to buildings and streets overhead, represent a continuous source of trouble to the coal mining company. The Scranton mines, on the whole, are now being worked out, the Kingston district from Luzerne to West Nanticoke having superseded them in importance. Normally one-half the total coal mined by the Glen Alden Coal Company is secured in the Kingston district.

The Lackawanna normally handles about 900 to 1,000 cars of coal a day. In summer, the lake season, about 50 per cent of the coal tonnage moves west to Buffalo, about 30

per cent east and the remaining 20 per cent to Lackawanna local points or to connections other than at Buffalo, such as for Canada through Utica, etc. In winter about 35 per cent of the coal movement is to Buffalo, whence it moves by rail over the various connections from Buffalo and Black Rock.

Hampton Yard

Probably the most important facilities for handling coal in the coal district are the assembling yard at Kingston and the hump yard at Hampton on what is known as the Keyser Valley branch. The empty cars for the Kingston district are distributed from Kingston and the loads assembled there. They are then moved in drags to Hampton yard, at which point also are assembled the cars loaded in the Scranton district. At Hampton the coal and other freight is classified over the hump by destination. The classifications number 22, including among others: Coal for Buffalo; coal for



Anthracite Mines Served by the Lackawanna

Michigan Central; coal for Grand Trunk; New York freight; Hoboken coal; Syracuse freight and empties, etc.

The west classification yard has 15 tracks ranging from 2,060 to 3,700 ft. in length, or holding from 50 to 97 cars and with a total capacity of 973 cars. The east classification yard also has 15 tracks, ranging from 21 to 76 cars, and with a total capacity of 765 cars. The three largest tracks in the westbound yard, in addition to being used for classification, are used largely for the handling of trains that do not require being put over the hump. There is also a receiving yard of 6 tracks with a capacity of 70 cars each. This yard, incidentally, is on a descending grade of 1.3 per cent. The classification yard, except for the hump itself and its approaches, is on a descending grade of 0.5 per cent.

For westbound movement trains are made up to 3,500 tons, or as it is termed in Lackawanna parlance, to 7,000 M's. Their movement to Clark's Summit requires a Mikado, usually assisted by a helper and two or three pusher locomotives, the helper and pushers being dropped at Clark's Summit, which is the end of the 1½ per cent grade. The west end of the Keyser Valley branch is at Cayuga, some four miles east of Clark's Summit. An interesting feature is the left-hand movement from Cayuga to Clark's Summit over a slow speed track which crosses under the other tracks to the right-hand side just east of the summit.

Coal moving eastward is made up to 2,500 or 3,500 tons, the trains requiring four or five locomotives eastbound up the 1½ per cent grade to Gouldsboro. If they are made up to the smaller figure only, they are filled out to 3,500 tons by the addition of cars assembled at Gouldsboro from mines on the Winton Branch which leaves the main line at Nay Aug.

In the foregoing we have spoken of the classification of the coal by destination. This term possibly needs some explanation. The loaded cars are assembled from the mines, but in the case of the Glen Alden cars they are not billed

with the other roads in trunk line territory. Prior to the war the road furnished a service rather better than that which the competing lines were able to maintain—it being able to offer this service because of its having the short line from New York to Buffalo, because of its facilities and because of the special care which the fast freight service was accorded. Up to the present its pre-war schedules have not been restored. The road now is offering the same manifest deliveries as the other lines. It seems, however, to be able to maintain its schedules somewhat better; its record for making connections is especially an enviable one.

The Lackawanna, like the other trunk lines, is now solicit-



Train 51 in the Poconos

ing merchandise or manifest freight out of New York on the basis of second morning delivery at Buffalo; third morning at Cleveland, Pittsburgh, Toronto, etc.; fourth morning at Chicago, St. Louis, Indianapolis, Cincinnati, etc.; fifth morning at Milwaukee and Nashville, and sixth morning at Kansas City, Memphis, etc. It is making the same deliveries on less-than-carload freight as it makes on carload freight, despite the fact that l.c.l. transfer freight must be delayed for some 12 or 15 hours for transfer into through cars at New York Transfer, Secaucus, N. J. Prior to the war the Lackawanna made a third-morning delivery at Chicago and a fourth-morning at Kansas City, and this summer put on a schedule offering these deliveries eastbound on perishables.

The Lackawanna's manifest trains are designated by sym-



Pushers for No. 51 at the Foot of the Pocono Grade

from the mines, but from the assembling yard—and then on the authority of a representative of the coal company whose office is at the yard. This, of course, means that in classification by destination the cars are in some measure also classified by sizes. Further classification by sizes must be carried out for the car dumpers at Buffalo and Hoboken. Included among the extensive facilities at Secaucus, N. J., for example, is a hump yard in which is classified the coal for Hoboken or for movement to the Lackawanna's territory adjacent to Newark, N. J.

The Movement of Manifest Freight

The Lackawanna's success in operating fast manifest freight schedules and its ability to make connections almost without fail has for many years been the road's chief stock in trade in the keen competition for fast freight business

FAST FREIGHT SCHEDULES					
Westward					
No. 51	First 55 Hoboken P. M.	Second 55 Pt. Morris P. M.	Third 55 Hoboken P. M.	Fourth 55 Hoboken Mid.	
Hoboken	Lv.	6.30	....	9.45	12.00
Secaucus	Lv. A. M.	10.30	....	....	....
Port Morris	Lv. ....	....	12.30	....	....
Slateford	Lv. 1.00	10.30	1.30	A. M. 2.00	A. M. 4.15
Scranton	Ar. 4.30	2.30	6.00	7.00	9.15
Binghamton	Lv. 5.00	4.30	8.00	9.00	2.00 P. M.
Elmira	Ar. 7.30	....	....	P. M. 5.00	5.45
Elmira	Lv. 8.15	8.30	12.00	1.00	8.00
Elmira	Ar. 10.25	11.30	3.00	4.00	6.00
E. Buffalo	Lv. 11.00	1.30 P. M.	5.00	6.00	8.45
E. Buffalo	Ar. 6.30	P. M. 8.30	A. M. 1.00	A. M. 2.00	3.45
Eastward					
	No. 52	No. 54	No. 56		
E. Buffalo	Lv.	A. M. 4.00	A. M. 9.45	P. M. 9.20	....
Elmira	Ar.	11.10	3.20	A. M. 4.05	....
Binghamton	Lv.	12.00	4.00	P. M. 4.45	....
Scranton	Ar.	2.55	....	7.45	....
Scranton	Lv.	3.15	6.15	8.00	....
Slateford	Ar.	6.15	8.30	11.00	....
Slateford	Lv.	7.15	9.30	12.00	....
Hoboken	Ar.	11.40	1.30	A. M. 4.15	....
Hoboken	Ar.	5.05	6.55	P. M. 9.30	....

December 3, 1921

to the
n that
being
rt line
nd be-
re was
have
same
ever,
; its
viable
olicit-

bol numbers. A tentative schedule showing arriving and leaving times at division and terminal points is issued in mimeograph form to officers and employees concerned. That is to say, the schedules do not appear in the operating timetable, nor is a symbol book used. The schedules are given in the table. With reference to the eastbound schedules, mention should be made that frequently three sections are run of No. 54 and two of No. 56.

The spectacular feature of these schedules is Train 51—the train handling package freight from New York Transfer. This train is due to leave Secaucus at 10.30 a. m., about 15 hours later than First 55 or about 10 hours later than Fourth 55. Its movement to Buffalo in 20 hours, covering about 385 miles, is made at an average speed, including terminal time, of about 20 miles an hour. First 55 is allowed 26 hours and Fourth 55 about 28 and they are not required to make as close connections with the lines beyond Buffalo as No. 51.

Train 51 is limited to 70 cars, about 4,200 Ms (2,100 tons), from Secaucus. It was put on about January 1, 1921, and for a short period the road found difficulty in giving it 50 cars of freight from the transfer. Business has gradually become heavier and heavier as the schedule and the manner in which it is maintained have become better known to shippers. As a result the train is now run frequently in two sections. Since the train was put on it has not missed connections at Buffalo, although if the train is late connections are protected by the Buffalo lines. The operation of this train may be taken as the leading example of what Lackawanna service means. It is, therefore, worth examining into the manner of its operation.

A considerable portion of the Lackawanna's manifest freight is received at its piers in New York City. For

Indianapolis, Peoria, St. Louis, Denver, Detroit and even for Seattle and San Francisco.

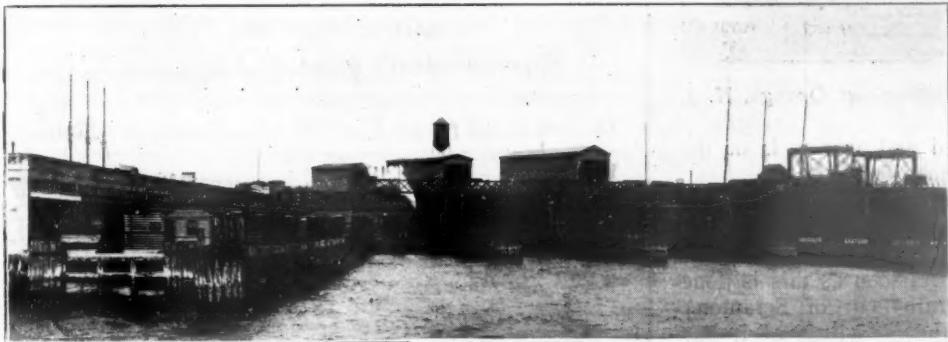
An interesting feature of the operation of the transfer is the manner in which the record is kept of the freight and way-bills. As soon as one of the incoming or "feeder" cars, is unloaded, the way-bills are sent to the transfer office and



Pier 1, Hoboken

sorted. The way-bills for a particular westbound car are then abstracted, the way-bills being forwarded early in the afternoon by train mail. Copies are made of the abstract, one of which is filed and another sent to the commercial agent at the destination point to which the car is routed. The commercial agents find these reports of special value in permitting them to keep in touch with consignees and to advise them of the arrival of their freight when it reaches its destination.

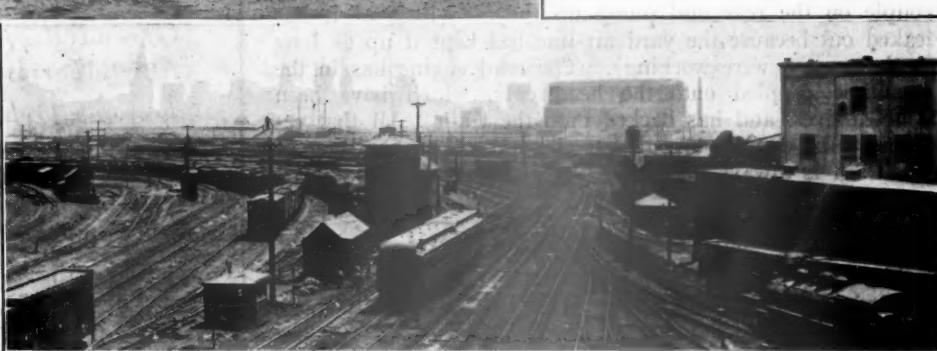
Naturally, in view of the small amount of time available for loading the train, many short cuts must be utilized. For example,



freight which can during the day be made up into through cars at the New York pier freight stations the problem is relatively simple. These cars are floated across the Hudson river and dispatched in the various sections of No. 55 from Hoboken.

New York Transfer

New York Transfer is situated adjacent to the Secaucus classification yards, about 4 miles out from Hoboken. The facilities at the transfer include three platforms, two 1,050 ft. in length and one 1,200 ft. in length. The forces are utilized in the forenoon, from about 6.00 to 10.30, for transferring the freight for No. 51. In the afternoon, or rather from about 11.00 to 3.00 o'clock, the eastbound cars are made up. About 17 gangs are used in the morning and about 10 in the afternoon shift. On a typical day 72 westbound cars were loaded with 591 tons and 48 eastbound with 288 tons. Through cars are loaded westbound for such points as Pittsburgh, Memphis, Nashville, St. Paul, Chicago,



The Lower End of the Yards at Hoboken—Above, Float Bridges at Hoboken

while the freight is being transferred, car inspectors examine all the cars carefully. The cars are provided with long air-hoses to connect the air-lines of cars not coupled, so that it is possible for the inspectors to test the brakes before the train is actually made up. The cars into which the freight is loaded are on three tracks. When the transfer forces have done with their work, two switch engines are used to put the train together. The road engine is waiting

and the conductor has his bills. An hour's time is a liberal allowance from the time the last truck-load of freight is loaded until the train is on its way.

The schedule for No. 51 allows it about 30 minutes at Scranton and 35 at Elmira, which means that any necessary switching, inspection of the train and changing engines must be done as rapidly as possible. As soon as the train enters the yard at Scranton, for example, the incoming caboose is removed by a switch engine and the new caboose attached. By this time the incoming locomotive is off of the train with about 20 cars from the head-end which it has to leave on an adjacent track, the tracks in the yard not being long enough to hold a train of 70 cars. Eight car inspectors are assigned to this train. As soon as the engines are detached the inspectors connect up the train-lines with the yard air-line and go over the train under the protection of blue flags. A switch

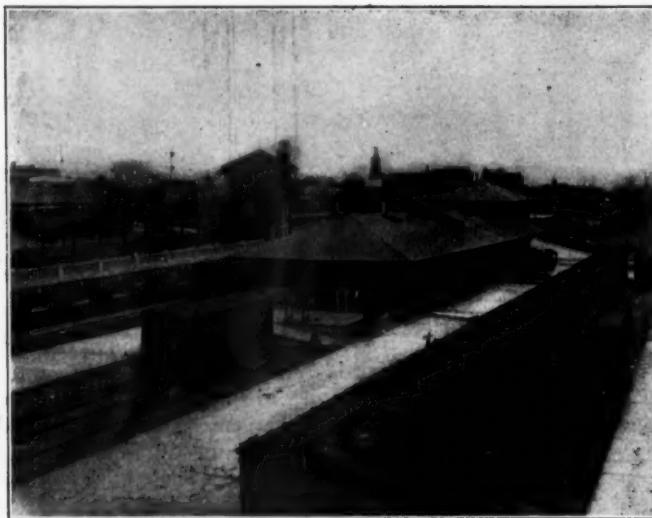
main line for the faster ones. Third class trains and extras, of course, clear the time of first class trains.

Train orders are used but infrequently in the ordinary course. If a first class train is late and the dispatcher desires to give inferior trains the benefit of the time, he may, if convenient, issue a "31" order to the first class train and "19's" to the inferior trains interested. If he does not wish to restrict the first class train, however, he can still give the inferior trains the benefit of the extra time by giving them a message to "use . . . minutes on No. . . . (the late first class train)" between certain points. When this message is used, no restriction is placed on the passenger train. It can make up all the time physically possible under the speed regulations. Automatic block signals and flagging rules are depended upon to prevent collisions. The dispatcher, of course, knows about how much time the passenger train will make up between certain stations, and this factor is reckoned with in authorizing inferior trains to "use" so much time on the first class train. A message to an extra freight train which was sent from the dispatcher's office at Scranton on August 11 giving time on first class trains, where no restricting order had been issued to the superior trains, reads as follows:

"C & E x 1152

Use 45 mins. on No. 44 and No. 46 to Lehigh."

Extra passenger trains may be run without train orders but, as distinguished from freight extras, they must display white signals. The following illustration shows a "19" order issued to inferior trains directing them to clear the time of a passenger extra.



A Model Freight House for Small Station—at Orange, N. J.

engine is stationed at both the head and rear ends of the train to set out any bad orders that may be found.

In the meantime, the conductor has his way-bills, the road engine is ready to back onto the train and two or three helpers are at the rear ready to couple on as soon as the carmen take down their blue flags. As soon as this is done the helper engines (used on all trains out of Scranton) couple on the rear and pump up the air (little of it has leaked out because the yard air-line has kept it up as long as the carmen were working). The road engine has in the meantime coupled onto the head cars, which have been doubled over, and has backed onto the train. All that remains to be done is to pull out of town. The handling of this train is always under the direct supervision of at least one yardmaster.

Advantage Taken of Complete Automatic Signaling

The Lackawanna has taken full advantage of a main line which is double-tracked and provided throughout with automatic block signals, in using modern methods of train dispatching. Trains move almost entirely by signal indication, with the result that unnecessary delays to trains have been thereby greatly decreased.

All through freight trains run as extras, but they do so without train orders ordering their movement and without displaying white signals. Clearance cards are issued and train registers kept at certain points. Beyond this no authority is necessary for the movement of extra trains. Third class trains when overtaken allow through extras to pass them. When drag extras moving ahead of manifest trains are likely to delay them, "19" orders or messages are issued by the dispatcher directing the slower trains to clear the

Form 19

THE DELAWARE, LACKAWANNA & WESTERN RAILROAD CO.

TRAIN ORDER NO. 100

Superintendent's Office, Hoboken, Aug. 9, 1921

To C. & E. all Extras East At Slateford Jct. Station

X..... Opr; M.

Psgn. Extra will pass Slateford Jct.
4.20 A. M.

Blairstown, 4.32 A. M.

Greendell, 4.42 A. M.

Port Morris Jct., 4.58 A. M.

Do not Delay them, and call on Telephone where you clear for this Extra.

R. M. W.

CONDUCTOR AND ENGINEMAN MUST EACH HAVE A COPY OF THIS ORDER

Made Complete Time 1:13 a. M. Scoalor Opr.

Time table rules require trainmen to be in a position to receive messages from the operator's hoop at every telegraph station, and conductors are required to report to the dispatcher by telegraph or telephone whenever their trains have come to a stop on a passing track, telephones being conveniently located for that purpose.

In addition to the two main tracks and sidings which are provided for the movement of trains there are, especially on the two eastern divisions of the road, numerous short stretches of third and fourth tracks. These additional tracks are in reality nothing more than elongated passing tracks

and are designated in the official parlance as "slow" tracks. The current of traffic moves over them in one direction only (i. e., that of the main track nearer to them, with the exception of the line from Cayuga to Clark's Summit, where the slow track is to the left) and they are in the ordinary course used only by inferior trains in clearing the through tracks for superior trains.

When a train enters the slow track it has fulfilled all requirements of clearing the main track. It will continue on



Train on Slow Speed Track Between Cayuga and Clark's Summit

the slow track until the superior train has passed and will then take the main track once more, except where the auxiliary track continues for some distance or when another superior train is expected soon. As a rule, slow freight and coal trains make a practice of using slow tracks east and west out of Scranton. Where these additional tracks are located at frequent intervals practically no time is lost by slow trains in allowing faster trains to pass them. Interlocking plants are located at the beginning and end of slow tracks, so that no stops are necessary on account of throwing switches.

Efficient operation of the whole railroad as a unit has been greatly facilitated by the installation, in addition to telephone dispatching, of a telephone system covering the entire railroad. Through it every office and every station of the company is in easy communication with all other offices. Delays and enforced brevity which characterize the handling

of office-to-office business by telegraph have thus been obviated. There can be no question but that the personal contact which is possible with the telephone system has been a great help in avoiding misunderstandings which often arise when messages and correspondence have to be relied upon for communication.

Lackawanna Supervision—33 Report

Operating department officers are able to keep in close touch with the performance from day to day by a complete situation report for the day previous, which is laid on the desk of every interested officer each morning. The report is known as the "33" report and embodies the following information:

1—Engine failures, time lost thereby and cause.

2—Delays to trains in arriving and leaving all registering points, engine number on each train, showing where more than one engine is used, tonnage of each train with the number of loaded and empty cars.

3—Bad order cars at each point on each division, storage cars at each point and loaded cars not moving at each point.

4—Accumulations of loaded and empty cars at Hampton Yard, Gouldsboro and Taylor Tank (the assembly yards for coal), number of loaded cars in transit and how many of these are foreign open, how many are foreign box and how many are Lackawanna cars and number of cars loaded which inspector has ordered back to mine because of unsatisfactory contents.

5—Movements of extra passenger trains and the state of the weather.

6—Cars at the various mines and mining districts.

7—Time of departure at initial point and arriving time at destination of all manifest trains and the number of loaded and empty cars and tonnage of each train.

8—Leaving and arriving time of all local freight trains and the number of loads and empties handled between various points.

9—Turn-around runs ("pick-ups" in Lackawanna parlance), between what points run, number of loaded and empty cars and leaving and arriving time.

10—Ice trains run and where cars handled to. (Note: The company gets most of its ice in the Pocono mountains and it is stored at Gouldsboro, whence ice trains run to various points on the system.)

11—Work trains run, by whom ordered, what material moved and what work performed and number of workmen.

The following details from the situation report will show in what manner the movements of Train 51—the train described above—were carried out and reported for the trip leaving Secaucus on the morning of October 11:

Morris & Essex division—

No. 51—Engines 1170 and 1169.
70 loads 4009 M's.
Secaucus 10:33 a. m.
Slateford Jct. 1:31 p. m.



Freight House at Buffalo

Scranton Division—

No. 51—Engines 1170 and 1169.
 Slateford Jet. 1:31 p. m.
 70 loads 4009 M's.
 Arrived Scranton 4:16 p. m.
 Left Scranton 5:07 p. m.
 Engine 1163—70 cars—4102 M's.
 Arrived Binghamton 7:30 p. m.
 Left Binghamton 8:05 p. m.
 71 cars—4408 M's.
 Arrived Elmira 10:05 p. m.

Buffalo Division—

No. 51—Arrived Elmira 10:05 p. m.
 Left Elmira 10:50 p. m.
 Engine 1165—72 loads 4627 M's.
 East Buffalo 5:00 a. m.

The advantages of such a report as this are obvious. Officers are given an opportunity to check up accurately the work of their subordinates. Mechanical and engineering departments are able to see what the operating department is doing and what its problem amounts to while, conversely, operating officers can tell at a glance what kind of performance they are getting from the mechanical and engineering departments in moving trains over the road. The report, too, being kept in the same manner each day, is susceptible of comparison with that of other days so that the officers may know whether conditions are improving, whether they are stationary or retrogressing. With complete information available and with an extensive use of the phone system, officers are able to detect errors and to call their subordinates and secure proper explanations within a few minutes, when ordinarily these errors might not be run down for days and perhaps weeks.

Careful Checking of Operating Details

It is, of course, rather trite to observe that as important as the information received by the operating officers may be, the manner in which this information is used by them is considerably more important. It is far from trite to say, how-

dinates and so on down the line, with the result that every man in the operating department is fully cognizant of the fact that he is expected to give 100 per cent efficiency or be called to account by some one higher up for not doing so.

The foregoing sounds to some extent, perhaps, like an elementary lesson in the subject of supervision, for what has been said is that the Lackawanna succeeds in securing the results for which every operating officer strives. How, therefore, does the Lackawanna secure these desirable results?

The operating officers of the road, for one thing, make it a point to use the telephone extensively, not only when they are in the office, as previously brought out, but at home. A further assistance to adequate supervision is the idea of frequent conferences, attended by general officers, the division superintendents and representatives of the marine and traffic departments, etc. Conditions are carefully discussed, remedies suggested if needed, and decisions made to correct or improve any conditions necessitating such action. The value of a daily or frequent conferences of this kind is too evident to need emphasis.

The movement of manifest freight is watched primarily from the 33 report. Supervision by the officers of the road, however, extends further than this through the attention paid to eliminating unavoidable delays to cars that may be set out from manifest trains. When a car is set out, the office of the superintendent of car service at Scranton is informed by wire, as is usual on most roads. The superintendent of car service is then required to keep tabs on the car to see that it is repaired promptly and forwarded. The work of his office is checked by a report of such cars rendered daily to the general officers. A similar report is required from the mechanical department relative to cars set out at division points.

The co-operation between the traffic and operating departments on the Lackawanna is a notable feature. As a result, the operating department is advised promptly of complaints by shippers and prompt steps are taken by way of remedy. Suggestions for improved service are talked over and decision, favorable or adverse, is made promptly. Through frequent conferences, such action is expedited and such delays as might occur through the matter being lost in voluminous correspondence are eliminated. Another feature is the encouragement given operating department men to solicit freight. In a recent period of about four months' duration, one yardmaster was credited with having secured over 500 routing orders.

Considerable attention is naturally given to tonnage ratings and train loading. This is reported to the general officers by the car accountant on form C. A. 201, daily tonnage report. The sheets of this report cover each ruling grade.

THE DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY										
OFFICE OF CAR SUPERINTENDENT										
DAILY TONNAGE REPORT										
West to Scranton Division From Scranton to Clark's Summit Date Sept 29 th 1921										
TRAINS	ENGINES			Total	Weather	CARS HAULED			M'S HAULED	
No.	Engines	Engines	Engines	Mileage	Total	Empires	Empires	Empires	M's of Car	M's of Contents
1468	367 831 510 798			32 4460		950 3500	59 1	2318 2115	4439 126.7	
31	1126 537 546 839			32 4120		120 4000	70 1	2781 1331	4112 102.8	
1468	1210 750 521			24 4285		285 4000	35 9	1767 988	2755 66.9	
	1171 830 503			24 3480		440 3000	49 2	2025 866	2591 96.4	
	1153 589 539 517			32 4305		305 4000	53 1	2172 1507	3679 92.0	
55	726 715 801 750			32 4250		750 3500	51 3	2284 1914	4198 119.9	
X	746 707 728 762			32 3670		670 5000	39 1	1478 3675	5153 103.1	
1468	1202 820 503			24 4000				4000 48 2	2115 2024	4139 103.5
X	1228 790 834			24 4085		832 200	3303 1	190 4160		4160 125.9
	1246 776 550 389 399			40 7045		45 7000	55 1	2076 5084	7159 102.3	
	1221 707 725 756 362			40 7465		455 7000	55 1	2147 4881	7028 100.4	
	1235 707 725 803 362			40 7605		505 7000	54 1	2069 5044	7113 101.6	
	1251 789 799 597			32 5995		5995 52	2037 5100	7137 119.0		
1468	1231 791 579 508			32 4800		800 4000	43 2	1855 3012	4887 121.7	
64	1229 724 725 556 362			40 7465		455 7000	57 1	2117 4909	7026 100.4	
Local	558 830			16 1965		50 1915	20 1	783 1235	2016 105.3	
X	785 399 367 720			32 5860		260 5000	37 15	2246 3056	5302 106.0	
	727 899 367 720			32 5260		260 5000	40 1	1564 3566	5128 102.6	
				91345		582 6550	84213	37993 50803	18296 104.8	

A Daily Report of This Kind Is Made for Every Ruling Grade

ever, that the care with which the details of operation are checked on the Lackawanna is the outstanding feature of the work of that road's operating department. The Lackawanna is a comparatively small and compact system. It is not so large but that the general officers are in a position to know fully what is happening along the line at all times. The knowledge by other officials that their work is being constantly watched by the general officers has a strong moral influence on them similarly to check the work of their subor-

Elsewhere in this article appears a copy of the report for September 29 for the seven-mile 1½ per cent grade from Scranton west to Clark's Summit. It is interesting to observe that the report shows on that day that the trains as a whole were loaded to 104.8 per cent of the engine ratings.

The Lackawanna in 1920 had a credit per diem balance of \$804,157. This is primarily the result of the extra effort given to move foreign cars to connections as rapidly as possible, a factor which is noticed most carefully at all times.

Hearings Before Senate Committee Continued

Testimony of Bird S. Robinson, Forney Johnston and F. A. Molitor—F. J. Warne Attacks Carriers' Statistics

WASHINGTON, D. C.

BIRD M. ROBINSON, president of the American Short Line Railroad Association, testified before the Senate committee on interstate commerce on the Capper bill and proposed repeal of the rate-making provisions of the Transportation Act on November 28. He defended particularly the group plan of making rates provided in Section 15-a of the act. This plan, he said, is sound and is the only one under which the Interstate Commerce Commission can meet the present situation confronting the railroads because it is the only one that takes care of the problem of the strong and weak roads. Mr. Robinson said there are four essentials to a proper solution of the transportation problem, the mandatory rule of rate-making, a rule of divisions which will give to the lines which are of service to the public a self-sustaining revenue basis, authority in the Interstate Commerce Commission to permit the abandonment of lines that cannot be made self-sustaining, and the consolidation of railroads so that the stronger lines may absorb lines which may be weak in themselves, but by serving as feeders would tend to increase the profits of the main lines.

Mr. Robinson said that a large part of the traffic of the country is originated by short lines and branch lines, but that railroads cannot prosper on that kind of traffic alone. To be prosperous they must share in the more profitable through traffic. He said he knew of comparatively few roads that properly can be called worthless and cited several examples of roads which at various times have been so called, but which later have become important or even prosperous. He said that the Detroit, Toledo & Ironton was an example of a so-called "worthless" road which suddenly, after it had been acquired by Mr. Ford, became not only self-sustaining, but was widely advertised as a model road, without any improvement in its physical condition, but because Mr. Ford was able to divert his traffic to that road and thereby give it a traffic which paid a higher average rate.

Very few of the short lines, Mr. Robinson said, fail to render a real public service, but they cannot continue to serve the public unless they are fairly paid and that can be done only under the group system of making rates, by which the Interstate Commerce Commission may increase their divisions to cover the cost of service on a road which has light traffic. If a railroad does not fill a public need, he said, it should be abandoned, but there is less duplication of service by railroads than there is of duplication of railroad service by unregulated motor truck lines allowed to be operated under most unfair conditions. In answer to the argument made on behalf of the state commissions that the valuation of so-called worthless roads has been used to swell the total value of the roads on which the commission attempted to calculate a 6 per cent return, Mr. Robinson said that the value of the roads included which do not perform a public service is very small.

If the rule of rate-making in Section 15-a is taken away, Mr. Robinson said, the Interstate Commerce Commission will have no standard by which to fix the divisions. In the past the divisions have been arbitrarily fixed by the trunk lines, who have not accorded the short lines a fair proportion. The Interstate Commerce Commission has not yet made divisions under the new law, but now has that matter under consideration and he was confident it would establish a rule of divisions that can be used by the short lines in negotiations with the trunk lines and that will give each part of the transportation system an adequate revenue based on its cost of service and a fair return on its investment suffi-

cient to maintain it. Mr. Robinson said that the process of consolidation would be facilitated if the earning power of the short lines can be brought up to a fair standard.

Mr. Robinson said that Congress ought to consider soon an amendment to the labor provisions of the Transportation Act. He said he had no criticism for the Labor Board, but that it is not possible for it successfully to do what Congress contemplated for it unless it and the Interstate Commerce Commission are enabled to work more closely together.

Forney Johnston for Security Owners

Forney Johnston, of counsel for the National Association of Owners of Railroad Securities, on November 23, completed the testimony of the witnesses appearing for the association.

Mr. Johnston asserted that the association was compelled to oppose the proposed measures because they were fundamentally wrong and destructive, and not merely because of the psychological or moral effect on railway credit and securities. He insisted that those proposing the mutilation of the Transportation Act were unconsciously trying to force the railroads into a status of absolute federal ownership and control to escape what they erroneously considered a partial interference with the state commissions. The obligation on the part of the state commissions, asserted Mr. Johnston, to readjust their rate structures after a general advance in interstate rates in order that both rate structures may contribute a fair proportion to the revenue necessary to sustain transportation involved no tangible and substantial loss in control. The state commissions were free to proceed in the normal way to deal with particular rates after any general advances consistent with the action of the Interstate Commerce Commission were put into effect.

Mr. Johnston pointed out that before the Transportation Act the railroads had no affirmative status before the commission to protect their revenue and the commission had no original jurisdiction over unreasonably low rates, its function being only to prevent excessive rates and avoid discrimination by the railroads themselves. The theory of the old act, he said, was that carriers would protect their own revenue by initiating higher rates when necessary, but that rate advances had never proven practicable before the Transportation Act for a number of controlling reasons.

"The first of these," Mr. Johnston continued, "is, that as rates are largely competitive, no increases could be accomplished without concert of action, and concerted action in fixing rates had been repeatedly held by the courts to be in violation of the Sherman act. In all of the advance rate cases full relief to the carriers was made difficult by the inability of the commission to adjust the rate structure to the circumstances of the different carriers, and to give adequate relief where needed without conferring excessive revenue upon carriers which did not require it, and also by the fact that the burden of proof on the carriers was held to be of the most exacting character. These facts, repeatedly recognized by the commission, established practical handicaps before the Transportation Act, although, in theory, revenue considerations were always before the commission.

Those proposing the repeal of the rate making provisions of the Transportation Act, Mr. Johnston asserted, were attempting to destroy the general public interest in transportation in order to secure a temporary advantage to individual litigants before the commissions. He said that if revenue considerations were practically excluded from rate hearings,

as proposed by those advocating the Capper bill, the government would be exercising the privileges of public ownership with none of its responsibilities.

Mr. Johnston pointed out that if effective revenue considerations were withdrawn from the commerce act, Congress was under obligations to yield the provisions in the act which confer jurisdiction upon the commission over approximately 90 per cent of the expenditures of the carriers and to abandon control over extensions, car service, wages and other important functions of the carriers, and also to repeal the Sherman act as applied to rate making.

Pointing out that in America it was impossible for Congress to force directly a consolidation of existing railway systems, Mr. Johnston asserted that the association of security owners had repeatedly urged upon Congress the necessity of a program of co-ordination and economies which could be made effective under our Constitution and without awaiting the slow process of consolidations.

Col. Molitor Testifies

Col. F. A. Molitor, chairman of the Board of Economics and Engineering of the National Association of Owners of Railroad Securities, testified before the committee on November 22. He showed that without the recent reductions in rates the net operating income of the railroads for the year ended August 31, 1921, had been only 2.85 per cent of the tentative value; and that this return would have been approximately 1.63 per cent if maintenance expenditures had been up to normal. Assuming an increase of 5 per cent in the volume of traffic, and allowing for the July reductions in wages, but not for the recent decrease in rates on farm products, he asserted that the net railway operating income for the year ending August 31, 1922, would be only 3.4 per cent.

Senator Poindexter inquired whether this estimate was based on a normal maintenance expenditure, to which Col. Molitor replied that it was not. "With normal maintenance," he said, "the net operating income would be \$408,000,000, or equal to but 2.2 per cent on the property valuation. If the recent decreases prescribed by the Interstate Commerce Commission on farm products were to be taken into account, the net operating income for the next year would be reduced to approximately \$350,000,000, or materially less than two per cent on the property valuation."

Testimony of F. J. Warne

The hearing before the committee in its general investigation of railroad conditions was resumed on November 25 to allow Frank J. Warne, representing the labor organizations of the train employees, to continue his testimony. Mr. Warne read from a prepared statement, which he said would take 48 hours. Chairman Cummins of the committee and Senator La Follette were the only members present most of the time. The latter appeared greatly interested in the statement, which was a general attack on the statistics presented by the railroad witnesses, while Senator Cummins frequently took issue with the witness. Although few of the members of the committee heard the testimony, from two to four stories a day based on it were sent to the newspapers. The statement included most of the charges against the railroads that have been made during the past 10 or 15 years.

Mr. Warne claimed to have proved that during the federal control period the railroads had received on the average the largest net operating income in their history, apparently by including with the net operating income the amount of the government guaranty, and he criticised the roads for not making this inclusion when they referred to the net operating income actually earned to show the relation that existed between revenues and expenses. He charged that the railroads had affected adversely or favorably their net operating income by increasing or decreasing their maintenance accounts

and that during the six months' period following the termination of federal control they had allowed their expenses to "simply run riot." To prove this he referred to the large expenditures for maintenance shown in the months of 1920 when the accounts were swollen by retroactive wage increases as compared with the first month after the guaranty expired. The roads, he said, "began extraordinary expenditures in order to put their way and structures and their equipment in the very highest state of efficiency at the expense, if possible, of the United States government."

Testimony on behalf of the railroads as to wage statistics were criticised because they in some cases included the amounts paid to general and other officers, although a separate exhibit had been filed to show how little their inclusion affected the general result. Mr. Warne gave the impression that average wage figures were very greatly increased by the inclusion of \$100,000 salaries, but he did not specify how many of such salaries were paid. In this connection he referred to the Interstate Commerce Commission's report in the Rock Island investigation which showed that officials of that road had been given bonuses in addition to their salaries. Among other things he said the railroad witnesses had used figures showing the increase in the payroll in recent years without referring in the same breath to the increase resulting from the increases in traffic and he then proceeded to correct some of the "statistical fallacies" by making various exclusions. One of these was the overtime payments and increases in overtime which, he said, "economically are not wage increases but represent the purchase at a higher rate of more man-hours." He also had some combination of figures to prove that the increases in wages made in 1920 were more than met by increases in revenues. This should be sufficient answer, he said, "to the unjustified contention of the railroads that increased wages are responsible for their discreditable showing in the year 1920." To account for the other increases in expenses Mr. Warne quoted some of the testimony regarding the expenditures by the Pennsylvania for locomotive repairs in outside shops and from a letter by John Skelton Williams regarding the profits of the steel corporation. He also read the names of railroad officials interested in companies that sold supplies to the railroads as shown in reports to the Interstate Commerce Commission in connection with an investigation of such relations for the year 1913, and he quoted from various other reports of the commission made several years ago. A Congressional investigation or one by the commission, he said, "will undoubtedly disclose the significant fact that in recent years all the railway supply companies have reported huge surplus earnings to be added to their already accumulated surplus secured through high prices to the railroads."

Mr. Warne also devoted some attention to the history of rebates and "that equally common and widespread practice of present-day railroad management of granting free transportation and the free use of private cars to passengers and representatives of favored shippers." This contribution to the information of the Senate committee as to the causes for the extraordinary increase in railroad expenses in 1920 which is the subject of the hearing was reinforced by quotations from the Interstate Commerce Commission's decision in the five per cent rate case, but he brought his story of unwarranted concessions to shippers down to date by referring to the \$122,000,000 paid in 1920 for loss and damage claims. Just how far this represented the payment of false claims amounting in effect to a rebate, he said, "is, of course, not known."

During part of the time Senator La Follette was the only member of the committee present. He gave every appearance of enjoying the proceedings hugely.

The committee proposed to hear testimony from W. G. McAdoo and Walker D. Hines before concluding the hearings.



The Bridge Destroyed in 1918 and the New One Which Replaces It

Baltimore & Ohio Completes Large Bridge Project

**The Structure at Lawrenceburg, Ind., Replaces a Crossing
Destroyed by a Large Ice Gorge in 1918**

By Philip G. Lang, Jr.

Engineer of Bridges, Baltimore & Ohio, Baltimore, Md.

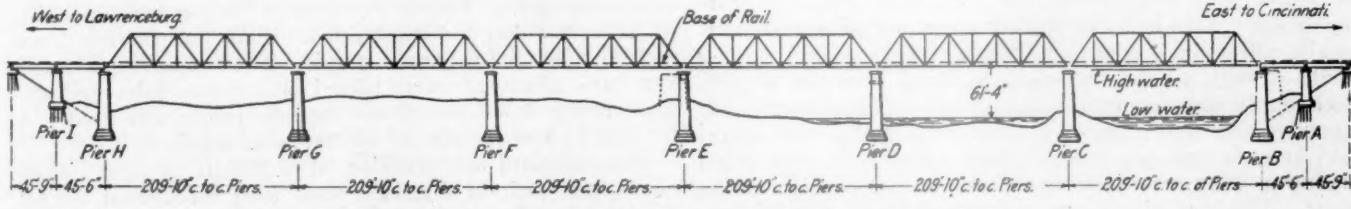
ON OCTOBER 1 the Baltimore & Ohio turned traffic over a new bridge crossing the Great Miami river, between North Bend, Ohio, and Lawrenceburg, Ind., on the main line to St. Louis. The project involved an expenditure of about \$2,200,000. This structure consists of six double-track, through truss spans, each 206 ft. 2 in. center to center of end pins, and two 45-ft. deck plate girder approach spans at each end. The new bridge is designed for E-60 loading, 14-ft. track centers, 8-ft. side clearance, and 25-ft. overhead clearance. The most formidable feature of the project was the substructure work which entailed the sinking of seven pier foundations by the pneumatic process.

The section of road on which this crossing occurs was originally known as the Ohio & Mississippi Railroad, created by an act of the General Assembly of Indiana, approved February 14, 1848, and confirmed by subsequent acts of the states of Ohio and Illinois, dated March 15, 1849, and February 12, 1851, respectively. The construction of the line between Cincinnati and Illinois Town, now East St. Louis, was commenced in 1852, and the road was opened to traffic in 1857. Its completion permitted through rail con-

nexion between the Atlantic coast and the Mississippi river, and was the occasion of the "Great Railway Celebration of 1857."

The original crossing of the Great Miami river at Lawrenceburg consisted of a series of timber truss spans, which were replaced in a few years by an iron structure consisting of three spans of Fink trusses. This bridge was rebuilt in 1894, using three 210-ft. through truss spans, supported on two abutments and two piers with a 48-bent pile trestle at the west end. The metal in the superstructure weighed 1,013,000 lb. and the bridge had a total length, including the trestle approach at the west end, of 1,350 ft.

The great floods which occurred in portions of the states of Ohio, Indiana and Illinois during March and April, 1913, are matters of common recollection. On March 25, 1913, the water at the Lawrenceburg bridge rose to an elevation two feet above top of rail; the westerly pier was destroyed and carried with it the two westerly truss spans, as well as 350 ft. of the approach trestle. Work was immediately commenced on a temporary timber trestle and traffic was restored on April 27, 1913. Contracts were placed at once



General Elevation of the New Baltimore & Ohio Bridge

for the construction of a new pier at the site of the one which was destroyed and the fabrication and erection of a new superstructure. The new spans were designed for E-50 loading, riveted throughout, and were of the same length as the old spans. These steel spans were completed on January 31, 1914, and continued in service from that date until they were wrecked by an ice gorge in February, 1918.

The early part of 1918 was characterized by weather conditions of exceptional rigor. The ice broke up and was released by a thaw which occurred during February. A large ice gorge was formed in the Ohio river, adjacent to the mouth of Sugar creek, a small stream which joins the Ohio river at the Kentucky side, about 40 miles below the mouth of the Great Miami. A smaller gorge occurred about six miles below Lawrenceburg, extending across the Ohio, between Rising Sun, Ind., and Rabbit Hash, Ky. At the Baltimore & Ohio bridge crossing the Great Miami river immediately above the confluence of that stream with the Ohio river, the water reached an elevation of approximately five feet below base of rail; the top of the accumulated ice floes, however, rose to an elevation approximately ten feet higher, or about five feet above the existing base of rail. When the ice gorge in the Ohio river at Rising Sun went out, the natural effect was to lower the water in the Ohio very rapidly and this pulled the water and ice out of the Great Miami. At 2:30 p. m., February 12, 1918, the ice turned over the three 210-ft. truss spans of the Lawrenceburg bridge and destroyed the approach trestle at the west end of the structure. The masonry, however, remained in place.

Baltimore & Ohio traffic was detoured over the adjacent upstream bridge of the Cleveland, Cincinnati, Chicago & St. Louis, and in view of the existing war conditions, as well as high prices of material, scarcity of labor and other factors, the reconstruction of the bridge was deferred, pending the advent of more favorable conditions. Consequently, the detour movement over the Big Four was continued until October, 1921. An exhaustive study was made of all local conditions, with a view to the adoption of such measures as would prevent a recurrence of the preceding disasters. The type of crossing finally adopted consisted of six through truss spans, each 209 ft. 10 in. center to center of piers, in place of the three spans previously used.

Comparative estimates indicated that the most economical

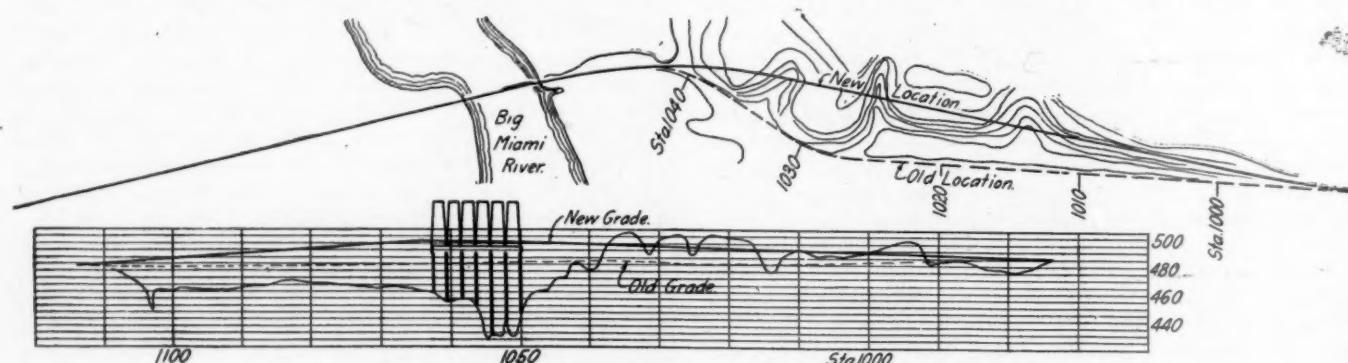
new base of rail to underclearance line is 6 ft. 7 $\frac{1}{8}$ in. and that from base of rail to the high water line of March, 1913, is 7 ft. 6 in. and the new bridge provides more than double the clear waterway which had existed under the previous structures. It is believed, therefore, that it removes the danger from future ice and flood conditions. In this connection, flood conservancy work, completed, underway and contemplated, was considered.

The substructure work involved the construction of six



View Through the New Bridge

new piers for the support of the truss spans, the extension of an existing pier from single to double track and increasing its height approximately 10 ft., and the construction of two bank piers and two bank abutments on concrete piles. The bottom at the site of this crossing consists of sand and gravel and it was found necessary to carry the foundation to a depth varying from 93 ft. to 99 ft. below the new base of rail. This



Location, Map and Profile, New Baltimore & Ohio Bridge

type of crossing provided for the utilization of the single-track pier which was built in 1913, founded on piles, and the use of span lengths identical with those which existed previously. This had the further effect of making an unusually attractive proposition from a structural steel standpoint, as with six square spans identical in every respect much duplication occurred. In lieu of building high and expensive abutments, two 45-ft. deck plate girder spans were used at each end, the cost of these spans with their substructures being materially less than the cost of high abutments. The base of rail was also raised 10 ft., thus giving 8 ft. 2 in. additional clearance. The distance from the

was done under compressed air. For six of the new main piers, reinforced concrete caissons were built in place at the sites of the piers. For the extension of the pier built in 1913, a timber caisson was constructed. This was carried down 105 ft. below the new base of rail. The two bank piers and two bank abutments were placed on concrete piles and approximately 4,300 lin. ft. of concrete piling was used. A total of 18,300 cu. yds. of concrete was required.

The superstructure contains 7,900,000 lb. of steel. Shop rivets, one inch in diameter, were used throughout, except for lateral and sway bracing, where rivets $\frac{7}{8}$ in. in diameter were used. The field rivets for stringer and floorbeam con-

nections and for all main truss connections are $1\frac{1}{4}$ in. in diameter. A continuous footwalk was provided on the bridge south of the tracks and between them, and a refuge bay was installed on the north side of the tracks at the center of each main channel span.

The erection of the steelwork was started at the west end. All spans were erected on falsework consisting of frame bents placed on mud sills. Following the completion of the false-work, the floor system was placed complete for one span after which the truss members were erected. In one case, all the members in two trusses, that is 44 pieces, were erected by one 50-ton locomotive crane in 12 hours. Immediately after the erection of the trusses, each span was swung clear of the falsework. In order that the erection equipment could operate readily, no top laterals were placed until after all spans had been erected and swung. The west deck plate girder span was erected on May 27 and the east through truss span was swung on August 22, 1921. The entire bridge was opened to traffic on October 1.

In addition to providing double track on the bridge, the approaches were double tracked for a distance of 5,841 ft. and 4,648 ft. to the east and west, respectively. On the west end provision for the raise of grade and second track was made entirely by raising and widening the existing embankment, but on the east end the change necessitated a relocation of the approach so as to afford support for the new grade against the hillside. This is indicated on the map. This change eliminates reverse curves of 5 deg., having a total angle of approximately 76 deg., whereas the new alignment contains only a relatively short 1 deg. curve. The line revision at the east and the grading of the approach on the west end involved about 210,000 cu. yd. of earthwork.

For the substructure and grading work, the contractor's camp, plant and equipment were assembled at the east end of the bridge. All concrete was mixed at a central mixing plant, located at the east abutment, where a steel tower 225 ft. in height, its top 275 ft. above low water, was erected, and the concrete chuted across the river. For the superstructure, the contractor's yard for the storage of steel, framing of the timber deck and falsework was located approximately one mile west of the west abutment. The yard in this case was an ideal one since it afforded a strip of land 100 ft. wide and 1,000 ft. long, that was practically level. This was served by two tracks, 18 ft. center to center.

The substructure, grading and incidental work was done by the Vang Construction Company of Cumberland, Md. The superstructure was fabricated at the Ambridge plant of the American Bridge Company, and erected by that company. The entire work was handled by the engineering department of the Baltimore & Ohio, under the direction of H. A. Lane, chief engineer, and the writer. A. H. Griffith, district engineer, was in charge of the work in the field.

The Form Nineteen Train Order

By Edgar W. Weston

Inspector of Train Dispatching, Northern Pacific

LEAVE WELL ENOUGH ALONE" is a slogan for the lazy-minded. From Columbus down to Thomas A. Edison, history records our debt of gratitude to the men who adopted as their motto "Make well enough better, and better best."

But for many of us it is difficult to adopt new methods. One stumbling block I have found in getting the A. R. A. to approve, or railway managing officers to adopt anything new in train rules, is that the A. R. A. will ask if it has been tried out on any railroad, and the railway officer will ask whether the A. R. A. has approved. Each seems to "sidestep," or "pass the buck."

In view of this, it is a strange fact that the A. R. A., in

the Standard Code, approves the use of Form 19 for restricting the rights of a train, and without having the operator clear with the dispatcher before delivery of the orders. Few railway managements have adopted the 19, and those who have, aside from the Northern Pacific and possibly one other, have surrounded it with so many restrictions and safeguards that its use is limited to a point where the 31 might just as well be used.

After reading in the *Railway Age* the letters from a Cleveland dispatcher and from Mr. Forman, and the editorial comment on the use of Form 19 train order, I feel there is no better time than the present to express my own ideas as to its exclusive use. Like that of Mr. Forman, my experience with train orders covers 40 years; and during the past 25 years I have given careful study to train rules and train orders. In my opinion, there should be but one form, and that Form 19. I will concede that signatures should be required when necessary to restrict a train at a non-telegraph office, or if it has already passed the train order signal; but let the signatures be on Form 19.

In 1912 the Northern Pacific began using Form 19 on one division to restrict the trains in automatic block territory. In a few weeks it was used also in non-block territory. In a few months it was extended over the entire system.

Your Cleveland correspondent says the safeguard of the middle order is not well enough appreciated. I cannot agree with him, for I believe it is appreciated; but in using the 19 order exclusively we cannot depend on the middle order for safety, as most roads west of Chicago have many sidings where there is no operator on duty, and many stations where there is telegraph service for only a portion of each 24 hours.

The middle order is used to protect the 31 as well as the 19 order.

The important thing is to insure the delivery of the restricting order. This assured, we want the form and procedure that will cause the least delay, with equal or greater safety. Nine years' experience with the exclusive use of Form 19 warrants me in saying that it is safer, and far ahead of Form 31 in every way. As your correspondent has well said, we must enforce rigidly the rules requiring clearance cards, and prevent the careless handling of the cards.

The profane language of train men and engine men when stopped to sign a 31 order is a moral argument against the use of that Form! The lurid language is, of course, directed against the dispatcher for his "—— thick-headedness" in stopping that particular train. I have asked a number of dispatchers and chief dispatchers what they would say if they were instructed to return to the use of the 31 order, and I get replies like this: "I will quit rather than use the 31," and "The person who suggests it ought to be hung, and I am willing to pull the rope."

My friend Bill Nichols of the Southern Pacific will say that Form 31 is preferred because it makes the work easier for the dispatcher. I do not think so; for no dispatcher worthy of the name will sacrifice safety in order to lessen his responsibility.

Mr. Forman, in his letter in your issue of September 24, outlines circumstances under which the 19 may, with safety, be used exclusively. Regarding the four points of his outline, I will say:

1. He is correct as to the clearance cards. This is the keynote of safety for the 19 order.

2. It may be a good thing to deliver additional copies so the fireman and flagman may have copies; but as such extra copies are no more essential with the 19 than they are with the 31, we cannot use that as an argument for the safety of the 19.

4. I have already commented on the middle order, and cannot see where it has any bearing on safety, as between 31 and 19.

Further, under "4" of Mr. Forman's letter, he says: "This

cannot be regarded as safe practice if (a) the superior train is directed to take siding, or (b) if it must pass the switch where the inferior train takes siding before it reaches the telegraph office where the middle order is to be delivered.

Is the Form 31 any more safe than Form 19 under these conditions? I cannot see that it is. However, I think Northern Pacific Rule 208-A is important, and tends to greater safety, no matter what form order is used. Let me quote this rule:

"208-A. Meeting orders, or orders conferring rights to the point where placed, must not be addressed to the trains of superior right, at the point of execution, if it can be avoided.

"When it cannot be avoided, special precaution must be taken by the train dispatchers and operators to insure safety, and the following notice will be incorporated in the order: _____ gets this order at _____."

"When a train is advanced by the use of a meeting order put out at meeting point as per Rule 208-A, it must be understood by conductors and engineers on the train advanced that they must approach the station named under control and take siding at the first passing siding switch unless otherwise directed, running through the siding expecting to find it occupied. The conductor and engineer of the train advanced must bear in mind that the opposing train has no notice of this meeting point until they reach the station, and must govern themselves accordingly; and must protect as per Rule 99 if necessary to reach the switch used by them in taking siding."

In my opinion there are no reasons of safety, economy, or efficiency to justify a return to the 31 on roads already using the 19, or to oppose the adoption of the 19 exclusively on all roads.

Since writing the above I have received the *Railway Age* for October 15 and have read with interest William Nichols' "Questions About Unsigned Train Orders." These questions are very much to the point and should be considered carefully. I should like the privilege a little later on of attempting to answer some of these questions; for very likely many will say that what I have written in favor of the exclusive use of Form 19 is "old stuff" and mostly theory. I will give as examples bearing out my conclusions some of the actual results that we have obtained by using Form 19 for restricting the rights of trains.

Freight Car Loading

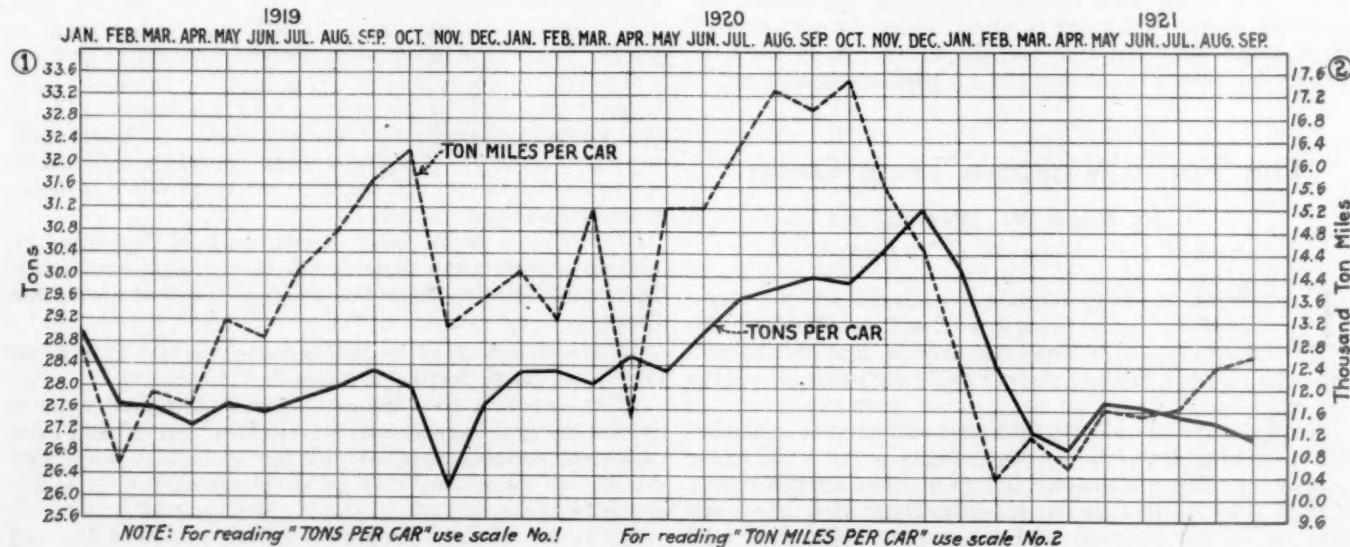
WASHINGTON, D. C.

THE REPORT compiled by the Car Service Division of the American Railway Association on freight car loading for the week ended November 12 is shown in the table which is given below.

The report for the week ending November 19 was delayed and is not available for publication in this week's issue. The car surplus report for the period November 15 to 23 shows another large increase in the number of surplus freight cars to 213,523. This is an increase of 73,334 as compared with the previous week.

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, NOVEMBER 12, 1921

District	Year	Grain and grain products							This year 1921	Corre- sponding year 1920	Corre- sponding year 1919	
			Live stock	Coal	Coke	Forest products	Ore	Mer- chandise				
Eastern	1921	7,994	3,530	39,357	1,883	4,254	2,708	59,347	65,542	184,615	.....	.....
	1920	5,589	3,589	58,098	3,182	7,070	9,966	47,662	90,844	.....	226,000	197,208
Allegheny	1921	2,906	3,607	39,974	2,791	2,443	2,616	40,677	53,406	148,420	.....	.....
	1920	2,562	4,691	66,124	7,274	3,327	11,613	39,586	66,436	.....	201,013	168,530
Pocahontas	1921	194	287	21,732	169	1,246	1	5,396	3,285	32,310	.....	.....
	1920	121	280	25,068	843	1,689	178	5,110	4,146	37,435	34,065	.....
Southern	1921	2,842	2,025	22,759	547	16,919	513	37,444	36,908	119,957	.....	.....
	1920	2,537	2,549	29,656	1,276	17,388	2,722	34,960	39,030	.....	130,118	115,052
Northwestern	1921	8,906	9,277	7,133	741	11,905	1,364	26,455	28,315	94,096	.....	.....
	1920	11,106	10,650	11,231	1,925	13,405	21,564	27,410	34,604	.....	131,895	124,182
Central Western	1921	8,359	12,648	17,513	183	6,542	687	30,497	37,700	114,129	.....	.....
	1920	8,636	14,726	25,383	469	5,775	3,005	29,789	45,153	.....	132,936	113,598
Southwestern	1921	3,201	2,895	3,841	136	7,352	769	15,623	25,702	59,519	.....	.....
	1920	3,956	3,026	7,314	141	7,602	635	16,744	28,771	68,189	55,669	.....
Total, all roads	1921	34,402	34,269	152,309	6,450	50,661	8,658	215,439	250,858	753,046	.....	.....
	1920	34,507	38,911	222,874	15,110	56,256	49,683	201,261	308,984	.....	927,586	.....
	1919	39,321	41,120	104,238	9,942	57,767	29,941	151,513	374,462	.....	.....	808,304
Week ended—												
November 12	1921	34,402	34,269	152,309	6,450	50,661	8,658	215,439	250,858	753,046	927,586	808,304
November 5	1921	40,921	31,126	172,875	6,739	51,188	10,979	234,770	281,124	829,722	915,615	826,724
October 29	1921	48,949	37,505	207,693	7,339	54,348	18,209	239,656	338,922	952,621	981,242	935,479
October 22	1921	51,001	40,188	212,219	6,647	53,426	23,186	236,640	338,985	962,292	1,008,818	977,051
October 15	1921	48,372	36,210	191,506	6,332	53,017	19,789	232,541	318,267	906,034	1,018,539	972,078



Chilean Railroad Electrification Program

Initial Contract of \$7,000,000 Provides for Complete Electric Operation of First Zone

THE FIRST PART of the Chilean State Railway to be electrified will include 116 miles of main line and 144 miles of track. The contract for equipment, as announced in the October 1, 1921, issue of the *Railway Age*, was awarded to the Westinghouse Electric International Company through its South American representatives, Errazuriz Simpson & Company, and amounts to a total of \$7,000,000. This is the most important railroad electrification undertaken in 1921 and is the largest single order for electric traction equipment ever received in this country. The equipment will be designed according to American standards.

Chile is a long, narrow country located between the Andes mountains and the Pacific Ocean, on the west coast of South America. It is 2,629 miles long north and south, and varies from 100 to 250 miles in width. The extreme length of the country results in a variety of climatic condi-

tions, between 4 and 5 per cent of the world's supply coming from Chile. Iron, sulphur and gold are also mined.

Other industries in Chile are farming and some fishing. The variety of climate permits the growth of a great diversity of food plants among which are tropical fruits, vegetables, and cereals, including wheat, barley, oats, rye, corn, beans, and peas.

The United States exports a great variety of materials to Chile, and our imports from Chile are also extremely varied in character. These include such items as chemicals, dye-woods, fertilizers, minerals, glue, india rubber, meat, tobacco leaf, wax and vegetables. In import trade to Chile the United States now ranks first and Great Britain second. Published statistics of Chilean foreign trade for 1920 show imports of about \$166,100,000 and exports of about \$284,300,000, a total of about \$450,400,000. The total wealth of Chile is estimated at \$3,200,000,000, or almost \$800 per capita.

The Railroads of Chile

The total railroad mileage of Chile is 5,200, of which about 30 per cent is privately owned mainly for mining and industrial enterprises. The remainder of the mileage is divided into two general classes, the broad gage lines and the narrow gage lines. The former extend south from Valparaiso by way of Santiago to Puerto Montt, with numerous branches, while the latter comprise most of the northern roads with a few branch lines in the south.

The conditions that arose during the recent world war brought very forcefully to the attention of the railroad management the necessity for electrifying the broad gage lines, especially the Valparaiso-Santiago line with the Los Andes branch, where traffic was rapidly approaching the track capacity. In addition, fuel costs were excessive while the almost limitless water power was going to waste.

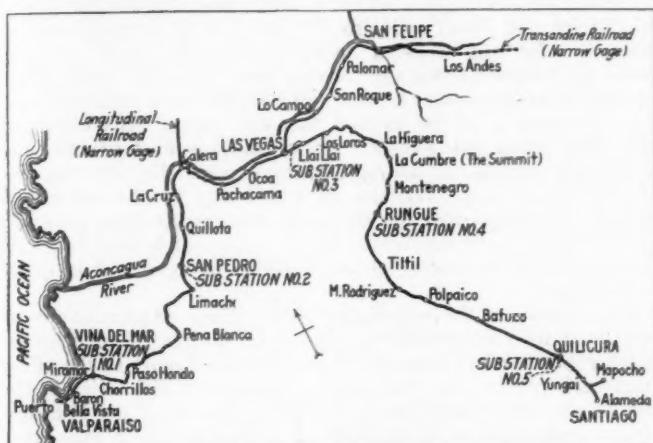
In 1918 a commission was appointed to study the problem of electrifying the broad gage lines. This commission, consisting of Rafel S. Edwards and Ricardo P. Solar, made a careful analysis of electrifications all over the world. As a result of the possible economies shown in the report of this commission, it was decided immediately to electrify the broad gage lines beginning with the Valparaiso-Santiago and Los Andes branches, or the first zone. A loan of \$10,500,000 for this purpose was authorized and was heavily over-subscribed a few hours after offering.

The specifications called not only for locomotives to fit the traffic conditions but also for all substation, distribution and overhead equipment, and for all construction work.

Initial Electrification Will Include 144 Miles

The initial electrification will include 116 miles from Valparaiso to Santiago, and 28 miles from Las Vegas to Los Andes. Los Andes is the terminus of the Transandine Railroad, a narrow gage line, while the narrow gage Longitudinal Railroad runs north from Calera, an important station on the line to be electrified. The maximum grade in this zone is 2.25 per cent, encountered in approaching La Cumbre (the summit) from the west. The line contains a relatively large number of curves, the maximum being 10 deg. The track gage is 5 ft. 6 in. There are six tunnels on the main line, the longest, the San Pedro, being 1,600 ft. in length. Three of the tunnels are located on the most severe grade approaching the summit.

The 3,000-volt direct-current system was decided upon



Map of the First Zone to Be Electrified on the Chilean State Railways Showing Location of Substations

tions. However, in the section to be electrified at present, the variation between maximum and minimum temperatures conforms to normal conditions existing in the temperate zones, the maximum temperature in the shade in the summer being from 100 to 110 deg. F. and in the sun as high as 130 to 140 deg. F., while in the winter the temperature goes as low as 20 to 25 deg. F. The rainfall in this district is relatively small. In the central and southern sections the Andes receive a heavy snowfall, making extensive water power available.

Chilean Foreign Trade Over \$450,000,000

The chief products of Chile are minerals, agricultural products, live stock and lumber. Many of these products are exported and move north over the railroads. In return coal, merchandise, machinery and food products are imported and form the bulk of the southward railroad movement. In Chile the nitrate deposits in the North rank first among the mineral deposits, and supply 75 per cent of the exports. In 1913, 3,000,000 tons were exported. Coal deposits ranked second to those of nitrates, but in spite of this fact, there is not enough coal to supply the country, and considerable coal is imported. The present output of coal in Chile is 1,800,000 tons annually while the consumption is about 2,700,000 tons, the railroads using 550,000 tons. Copper is also an important mineral de-

as best suited to the conditions. Hydro-electric power will be generated at the Maitines station of the Chilean Electric Tramway & Light Co., Ltd. This station is already under construction and will utilize the waters of the Rio Colorado. The station will contain three 8,125 kilovolt-ampere generators and will have an ultimate capacity of 30,000 kilowatts. This power will be transmitted 37 miles to Santiago by twin circuit 110,000-volt transmission lines and will be generated at 50 cycles, 3-phase. These transmission lines will be connected at Santiago with the system fed by the Florida hydro-electric station and the Mapocho steam station, both of which were constructed some years ago by the Germans and were designed for 50-cycle 3-phase power. The total capacity of the three generating stations at present proposed will be, when completed, approximately 120,000 kw.

Substations Provide for Large Increase of Traffic

The power supply will be distributed by five substations designed to handle a train movement that is approximately 50 per cent greater than that existing in 1917, with a further provision for tripling the 1917 traffic demands, if necessary. Each station will initially contain two 2,000 kw. motor generator sets, each set consisting of a 2,800-hp. driving motor, and two 1,000-kw. 1,500 volt generators connected in series. These sets will be designed to withstand a 200 per cent overload for five minutes without injury, and as an additional safeguard a flash suppressor will be included.

Substations 1 and 5 will receive power at 12,000 volts while 2, 3 and 4 will receive power at 44,000 volts and power indicating and limiting equipment will be installed.

Motive Power

Thirty-nine electric locomotives are required for the initial electrification, including 6 express passenger, 11 local passenger, 15 road freight and 7 switching locomotives. The main points of interest about these locomotives are given in the following table:

Type locomotive	Weight, tons	Length, ft. in.	Wheel arrangement	Number of motors	Total h. p.	Max. speed, miles per hr.
Express passenger	127	58 ft. 6 in.	2-6-0—0-6-2	6	2,250	63½
Local passenger.	80	40 ft. 6 in.	0-4-0—0-4-0	4	1,500	56
Road freight....	113	49 ft. 10 in.	0-6-0—0-6-0	6	1,680	40
Switching	65	40 ft.	0-4-0—0-4-0	4	480	34

The express passenger and road freight locomotives will be equipped for regenerative braking. The service in which the local passenger locomotives will operate will not require or justify the regenerative braking feature.

According to a statement issued by the Westinghouse International Company this contract includes only the first railroad zone of the electrification project which Chile has undertaken.

Electrification of English Railroads

THE PRELIMINARY REPORT of the Electrification of Railways Advisory Committee in England was published in the November 5, 1920, issue of the *Railway Age*. The final report has now been published in pamphlet form.

The committee was appointed by the Ministry of Transport in March, 1920, to consider and advise:

1. Whether any regulations should be made for the purpose of ensuring that the future electrification in this country is carried out to the best advantage in regard to interchange of electric locomotives and rolling stock, uniformity of equipment or other matters.

2. If any such regulations are desirable, what matters should be dealt with, and what regulations should be made.

3. How far it is desirable, if at all, that railways or sections of railways already electrified should be altered so that they may form parts of a unified system.

Subsequently in October, 1920, the terms of reference were extended as follows: To consider and advise—

1. Whether any regulations should be made to limit the drop of potential in an uninsulated return conductor on electrically operated railways.

2. If any such regulations are desirable, what limits these should impose, and under what conditions.

The committee in its final report now desires to confirm the recommendations contained in its preliminary report. The final report is remarkable for its brevity and the following excerpts from the report are worthy of especial attention:

The committee desires to add to the preliminary report that from the evidence which has been put before them, as well as their own experience, they have come to the conclusion that alternating current supplied to the substations at a frequency of 50 cycles can be used for railway purposes without any detriment to railway working.

In respect to contact rail collection, it is essential for the interchange of electrically operated trains, that the contact rails should be so placed as to enable current to be collected by the same trains both on railways employing 1,500 volts and on those employing 600-750 volts. The top-contact type of rail is that now generally in use for the present low voltages; the under-contact type of rail has also been largely used, and, in the opinion of the committee, possesses advantages in regard to interference by the accumulation of ice and snow, and also in regard to the arrangement of protection for men working on the track with higher voltages. Suitably designed shoes can be run interchangeably with either the top or under-contact type of rail. Under these circumstances, the committee is of the opinion that the contact rails employed may have either a top-contact or an under-contact surface, and it does not consider it desirable to recommend the exclusive use of either type, some varieties of which may be the subject of patents, but thinks that the choice in this respect should be left open, subject to the regulations below, so as not to interfere with such future improvements as are likely to be developed in either or both types.

With regard to the practicability of further standardization of equipment by regulations, the committee desires to confirm the views expressed in Clause 10 of the Interim Report to the effect "that such regulations should put no avoidable difficulties in the way of the adoption in future, with the approval of the Minister, of any improvements in methods or appliances which may from time to time become available with increasing knowledge and experience," and to add that the committee does not consider it desirable, in the interests of railway electrification, that further regulations (other than those recommended in this report) should be issued for the time being.

With regard to the extended references 1 and 2, the committee, after careful consideration, finds that—

(1) The evidence given by the railway companies operating electric railways indicates that the cases of harmful effects due to a drop in potential substantially in excess of that allowed by Tramway Acts in earthed railway conductors have been few and unimportant, and readily corrected by the railway companies themselves on their own initiative.

(2) The clauses for the protection of observatories inserted in the Acts of Railway Companies applying for powers to operate their railways electrically have had, and continue to have, a retarding effect on railway electrification. The committee having heard in evidence officers concerned with the observatory instruments likely to be affected by the operation of electric railways, is of the opinion that the interests of observatories would in any case be sufficiently protected if the scope of the clauses referred to were limited to the portions of electric railways within the vicinity of the observatories.

Having regard to these considerations and to the views expressed in Clause 10 of the Interim Report, as well as to the difficulties in imposing any definite limit to the voltage drop owing to the variety of conditions which present themselves along different portions of any railways, the committee therefore recommends that—

(1) It is not desirable that regulations should be issued to limit the drop of potential in an uninsulated return conductor on electrically-operated railways.

The recommendations are briefly summarized in the following:

December 3, 1921

RAILWAY AGE

1111

Standard system of power generation—Three-phase alternating current.

Standard system of power distribution—Direct current.

Standard Pressure—1,500 volts at substation busbars; in special cases a multiple or sub-multiple of 1,500 volts, if approved by the Minister.

Standard collection—Contact rail or overhead contact wire.

Contact rail standards—Top-contact or under-contact rail, with the contact surface in a horizontal plane installed at a gage of 1 ft. 4 in. from the gage line of the nearest track rail.

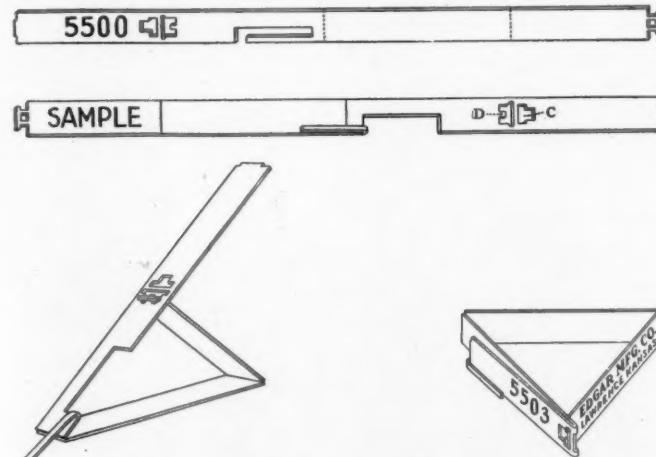
Overhead contact wire standards—Installed normally over the centre of the track at a height of 3 ft. above the maximum load gage likely to be used on the line, and at a maximum height of 20 ft. above track rail level.

Limitation of drop in earthed return conductors—No regulations to be issued.

Edgar Steel Car Seals

SINCE THE DAYS of the lead and wire car seals requiring the use of sealing irons or special construction for their application, numerous types of self locking, self contained seals have been developed not all of which, however, have been proof against skillful tampering. The seal here described has recently been developed by the Edgar Steel Seal Manufacturing Company, Lawrence, Kan., to prevent the possibility of tampering with the fastening of the car door without destroying the seal beyond the semblance of repair.

The seal is cut from strips of No. 21 B. W. G. steel, 5/16 in. in width and each seal as furnished to the user, is self-



Details of the Seal and Method of Locking

contained. The seals are formed by punching suitable openings through the strips, nicking them at certain locations and trimming one end to form a perforated tee projection. Each seal is stamped with the name or initials of the user and a serial number.

The seal, which is triangular in form when locked, is applied and locked in one piece. In addition to the perforations required for locking, the seal is weakened at two points by nicking, thus locating the angles of the triangle when the seal is closed and locked. In applying the seal it is held with the number right side up toward the operator and is passed through the opening in the hasp lock until the nicks on the body of the seal are located one on either side of the opening through which the seal has been passed. The tee head end of the seal is then bent forward until it forms an angle of not more than 45 deg. with the body and the other end is bent forward until the two come together, allowing the tee head to be sprung firmly down over the post in the tee slot D. The seal is locked by bending the number end directly backward

until it is closed against the side of the triangle of which it originally was an extension. The weakness created at the tee slot causes the bend to take place at this point and the opening C closes directly over the protruding end of the tee head. This opening is not wide enough to permit the removal of the tee head from the post D which supplements the projections of the tee head against the sides of the narrower portion of the tee slot D in securely locking the seal.

To protect the numbered end of the seal from being accidentally raised away from the side of the triangle a slender projection formed in the type illustrated by the L-shaped slot in the body, is bent back before the seal is locked, and then bent forward over the numbered end to hold it in place. A later modification of the seal at this point, consisting of a change in the location and direction of the L-shaped slot, brings the projection directly into position for bending over the numbered end without bending it back. This form saves one operation required in locking the form illustrated. On seals of this form a projection, made by indenting the back side of the seal, has been provided to keep the numbered end from being bent down tight against the body of the seal. This lessens the probability of the lock being gummed in position after an attempt to tamper with the seal.

When locked the seal possesses considerable strength against the effect of a direct pull and to break it in this way involves considerable difficulty. To remove it by unlocking, however, involves the straightening out of the numbered end and of the angles formed at the nicks in the body of the seal, and this operation results in the complete failure of the metal at the sides of the tee slot in the case of the numbered end, and in the nicks at the angles in the body of the seal. Any attempt to remove and reapply the seal, therefore, results in its complete destruction into four short pieces of metal. The complete absence of a seal following any attempt to tamper with it facilitates prompt detection and this is said to have become a deterrent against attempts to enter cars bearing seals of this type.

The compactness with which these seals may be packed, because of their uniform section, makes it possible to store them in comparatively large quantities in an office safe or cash drawer, where they may be kept under lock and key with less opportunity for theft than is likely to exist with seals of more bulky form.

Semi-Automatic Arc Welding Lead

A SEMI-AUTOMATIC arc welding lead has just been developed by the General Electric Company, Schenectady, N. Y., for use in conjunction with its automatic arc welding head, which retains the continuous features of the automatic apparatus, yet allows the operator to direct the arc as required by the conditions of the work.

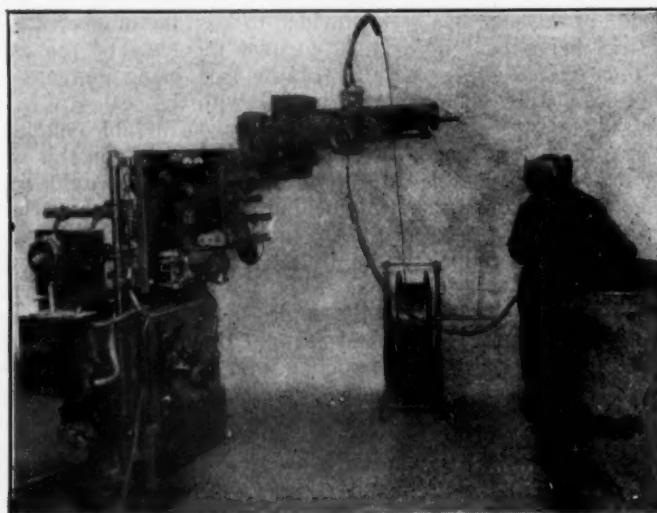
The apparatus consists of a welding tool to be held by the operator, which acts as a guide for the electrode wire. In the handle of the tool, which greatly resembles an automatic pistol, is a switch for operating the control on the panel of the automatic welder to start and stop the movement of the electrode wire. Attached to the tool is a 10-ft. length of flexible steel tubing, called the "flexible wire guide," with an adapter on the other end for attaching it to the automatic welding head. The wire passes from the feed rolls of the head into the flexible tubing, and thence to the arc through a "guide nozzle" in the welding tool. The automatic welder functions in its accustomed manner, tending to hold the arc length constant, and the operator merely directs the arc as required by the particular job in hand.

The field of application of the semi-automatic lead is the welding of products where the seams to be welded are of very irregular contour, or on very large work where the

travel mechanism and clamping necessary for the full automatic welder would be complicated and costly. In many cases the edges of the seams are not accurately prepared, making gaps in some places and tight fits in others. The automatic welder with mechanical travel cannot compensate for these conditions by varying the speed, or by manipulation of the electrode, but with the semi-automatic, they are taken care of.

The semi-automatic welder may also be used for building up metal rapidly, as in the case of the filling up of blow holes in castings, or the building up of worn spots, etc. The speed of deposition of the metal varies widely, being somewhere between the ordinary hand speed and that of the automatic, according to the conditions of the particular job. In general it is about twice as fast as hand welding.

The advantages claimed for the automatic welding equipment may be summed up as follows: (1) Saving in time which is ordinarily lost in changing electrodes; (2) Saving



General Electric Semi-Automatic Arc Welder

of from 10 to 20 per cent in electrode material ordinarily thrown away as waste ends; (3) Operators can become proficient in the use of the tool very quickly, as they do not require the muscular training necessary for hand work; (4) Continuous operation results in few interruptions in the welding, each of which is a potential source of defective welds.

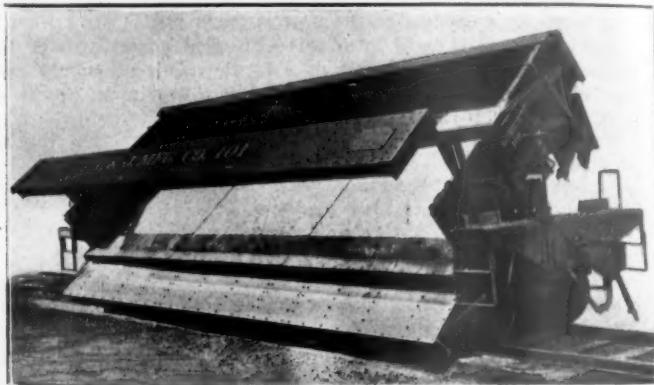
Apron Attachment Facilitates Use of Air Dump Cars

THE USE OF DUMP CARS in ditching or other service sometimes leads into difficulties because the material is dumped too close to the rail, resulting in the fouling of the ballast and in the expenditure of considerable hand labor to keep the track clear. Engineers who have encountered this difficulty will be interested in an apron attachment which the Kilbourne & Jacobs Company, Columbus, Ohio, has devised for its all-steel automatic air dump cars to overcome this difficulty. Particular interest is derived from the fact that this attachment is not alone an improvement in new equipment manufactured by that company, but may be added to any cars of that make now in service.

This apron attachment is in effect a 28-in. extension of the car floor on both sides, pivotally connected in such a manner as to take a position in a plane practically parallel to the floor when the car is in the dumping position. As the car is dumped the apron on the low side is moved outward auto-

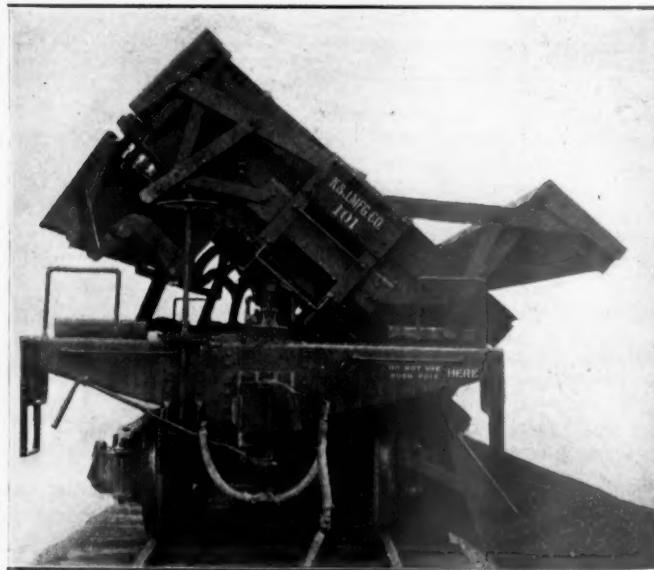
matically and when the car is again righted the apron is restored to the vertical position. The aprons on the two sides of the car are absolutely independent of each other.

The operation of these aprons is coincident with and a part of the operation of the car itself which is actuated by compressed air drawn from a reservoir embodied in the car. In service it is operated by air drawn from the regular air



Side View of the Car in the Dumping Position

brake train line, this passing through a check valve into the reservoir situated in the girder of the car. Its entire operation is controlled by a hand lever for each side. A vertical cylinder 20 in. in diameter is situated on each side of the car and the dumping is effected by the travel of a piston on the side opposite that to which the load is to be dumped. The car is righted by the operation of the cylinder on the dumping side. By connecting the auxiliary valves on each car



The Apron Keeps the Ballast and Rail Clear

through the medium of an air line, any number of connected cars may be operated as a unit from a position at the operating levers of any car in the connected unit. Use of the K. & J. car fitted with the apron attachment demonstrates that the material in the car is cast well away from the track.

FRAUDULENT USE of monthly commutation tickets was detected on the Long Island Railroad, in five months ending with October, in 247 cases. The conductors took up the tickets and the railroad company's last Bulletin gives the names of these conductors. One of them, W. Muir, took up 40 tickets. A large number took up from two to seven each, and a still larger number are credited with getting one each.

General News Department

Five thousand poles, telegraph, telephone and trolley wire, were reported destroyed or disabled in New England—mainly within 50 miles of Boston—after a severe rain and sleet storm on November 27, 28 and 29. The suspension of telephone and electric lighting service was the most extensive on record for many years.

Annual Meeting of Federated Societies

The Federated American Engineering Societies will hold their annual meeting at Washington, D. C., on January 5 and 6 at which reports will be submitted showing the progress of the federation since its formation in 1920 when Herbert Hoover was elected president.

Mr. Elliott's Holdings of Stocks

In applying to the Interstate Commerce Commission for authority to hold the office of chairman and director of the Northern Pacific while also serving as director of affiliated companies and assistant to president and director of the New York, New Haven & Hartford and director of affiliated companies, Howard Elliott has filed a statement with the commission giving the status of his holdings of stocks and bonds of the companies. This shows him as the owner of 100 shares of Northern Pacific but only from one to ten shares of the other companies to qualify as a director, and no bonds.

Informal Instruction of Reading Employees

"Safety first," saving fuel, solicitation of freight and prevention of fires are among the subjects that are to be presented at noon meetings of employees of the Philadelphia & Reading which are to be held at the Y. M. C. A., Spring-Garden street station, Philadelphia, on December 7, December 14, December 21 and weekly thereafter. These meetings are intended to promote more intimate relations and more thorough cooperation between employer and employee. Department heads will discuss their work and its relation to that of other departments. Among the scheduled speakers are: J. T. Pratt, supervisor of safety; E. D. Osterhout, assistant general passenger agent; Charles P. Dampan, supervisor of fuel conservation; Harry E. Paisley, treasurer (on thrift), and F. M. Falck, general manager.

5,000-Volt Direct Current Locomotives

A potential of 3,000 volts direct current is now used successfully for the electric operation of heavy trains and, if necessary, 5,000-volt equipment will be developed, according to a statement made by Charles P. Steinmetz, chief consulting engineer for the General Electric Company, in a talk to the New York Electrical Society in New York on November 25. At the same time Mr. Steinmetz stated flatly and emphatically that two-thirds of the coal burned by steam locomotives was wasted and that this two-thirds could be saved by electric operation of trains with power derived from coal burned in steam-electric stations. When asked to verify this last statement, however, Mr. Steinmetz spoke only in generalities and produced no figures or tangible argument to substantiate his claim.

Senate Calls for Railroad Administration Accounts

On motion of Senator La Follette, the Senate, shortly before its adjournment, adopted a resolution directing the director general of the Railroad Administration to furnish to the Senate on or before December 10 detailed information with reference to the settlement of claims growing out of federal control of the railroads and the administration of the affairs committed to him by the transportation act. This called specifically for a statement of account between the government and the carriers from the begin-

ning of federal control down to December 1, 1921, a statement showing in detail the claims which have been settled, showing the amounts claimed by the railroads and the basis of settlement finally arrived at, the purpose being to show in concise form the character of the settlement which has been made with each individual road.

Standard Contract Forms Planned

In an endeavor to promote uniformity of contract forms, the Associated General Contractors of America has called a meeting of interested engineering organizations at Washington on December 15 to organize a joint committee on standard contract forms. Among the organizations which have been invited to participate in this conference are the American Railway Engineering Association, the American Society of Civil Engineers, the American Institute of Architects, the American Engineering Council and others interested in private and public construction work.

Baggage Agents Meet

The American Association of General Baggage Agents held its annual convention at San Antonio, Tex., on November 16, 17, and 18, with an attendance of more than 100 members and associate members. The association's membership is largely composed of baggage officers from 78 major lines in the United States, Canada and Mexico and associate members, representing express companies and other interests relating to baggage transportation.

The convention devoted its attention to the promotion of uniformity of baggage tariff rules, more efficient handling of railroad business mail in interline baggage service, uniformity of color, general makeup, etc., of baggage checks; uniform methods of tracing lost or unclaimed baggage, and the vigorous prosecution of claim prevention work. The association has inaugurated a campaign to protect the traveling public against damage to baggage. It was stated that a large amount of the baggage claims are the direct result of inferior and unsafe baggage receptacles commonly in use. Fragile and insecure containers are particularly susceptible to damage, and this campaign, which will be nationwide and accompanied by a large amount of publicity, is for the purpose of educating the public in the exercise of better care and judgment in purchasing and selecting baggage receptacles. Steps were also taken to improve the service and the handling of baggage by the employee.

The following officers were elected for the coming year: President, E. B. Carson, general baggage agent, Southern Pacific, Pacific System, San Francisco, Cal.; W. J. McPhail, general baggage agent, Pennsylvania System, Eastern region, Philadelphia, Pa.; secretary and treasurer, E. L. Duncan, general baggage agent, Chicago & Eastern Illinois, Chicago. The next meeting will be held at Minneapolis, Minn., on June 28 and 29, 1922.

Historical Handbook of the A. R. A.

The Directors of the American Railway Association have issued, for members, a handsome book of 134 pages, 9 1/4 in. by 6 in., containing in concise form a history of the activities of the association from its first meeting in 1872; and especially the history of the last two years, during which the scope of the association has been greatly enlarged.

The history up to 1919 fills only about 10 pages; but the rest of the book is packed with useful information about the present activities of the parent organization and of the numerous divisions.

The number of railroads holding membership in the association is now 712, operating 315,340 miles of road, including companies in Canada, Cuba, Japan, Mexico, Phillipine Islands, Porto Rico and Yucatan.

The book contains the substance of most of the conclusions reached at recent annual meetings, of the association and of divisions and sections, together with lists of officers and com-

mittees, with condensed statements of standards of practice which have been adopted or approved by the association.

For railroad officers who have participated in (or who have followed) these activities, the book serves as a valuable compendium of details of things which, in a general way, they already know, or ought to know; while for other readers it will prove a luminous and informing work concerning a great variety of useful scientific investigations and economic discussions relative to railroad operation, the value of which ought to be more widely known.

"A. R. A." has come to be almost as familiar a phrase on railroad men's lips as "I. C. C."; and, like the latter, it is by many people used, in connection with standards, sanctions or ways of working, with only a dim understanding of its full significance. This handbook should be a welcome aid to such people.

Railroad officers can, doubtless, get copies from General Secretary J. E. Fairbanks, 30 Vesey street, New York.

Advocates of Public Ownership Hold Convention

With the avowed object of "bringing together the leading advocates and representatives of municipal and public ownership in the United States and Canada for the consideration and study of the problems of public ownership; to get the ideas of the most careful and competent utility experts in America, to hear the methods and plans of those who have made a success of public ownership, and to consider ways and means for advancing the public ownership, efficient management and democratic control of public utilities and natural resources," a convention was held on Saturday, Sunday and Monday, November 19, 20 and 21, in the Congress Hotel, Chicago, under the auspices of the "Public Ownership League of America, the Plumb Plan League, the National Non-Partisan League and 65 other labor, farm, civic and commercial bodies". About 100 out-of-town representatives attended the convention and the attendance at different sessions varied from a figure approaching 400 on Sunday evening to 50 Monday morning.

While preparations had been made for an elaborate discussion of the railroad question, J. H. Hopkins, "of a committee of 48 assigned to the study of the railroad problems"; J. F. Comings, lieutenant-governor of Wisconsin; W. H. Johnston, international-president, Association of Machinists; Laurence B. Finn, former chairman of the Kentucky Railway Commission; Timothy Shea, vice-president, Brotherhood of Locomotive Firemen and Engine-men; E. F. Grable, grand-president, United Brotherhood of Maintenance of Way Employees; Warren S. Stone, grand-chief of the Brótherhood of Locomotive Engineers and Glenn E. Plumb, special attorney for the railway brotherhoods, it developed that L. B. Finn, Timothy Shea, E. S. Grable and W. S. Stone were unable to attend.

The address of Glenn Plumb was in the nature of a reiteration of the ideas which he has advanced on previous occasions concerning the railroad situation under private ownership. That the roads are physically bankrupt was the conclusion which Mr. Plumb drew from his statement that "tracks and roadbeds are disintegrating for lack of care, and cars are piling up on sidetracks for lack of repairs. Under the employees plan," said Mr. Plumb, "the government would own the railroads. They would be operated by a corporation, guided by a board of directors—one-third to be chosen by the employees, one-third by the managing officials and the remainder by the President." He then stated that one-half the saving which would result from this plan would go to increase wages of the employees and the other half would be used to build new roads and to effect improvements in existing equipments and facilities.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Next meeting, May 2-5, 1922. Exhibit by Air Brake Appliance Association.
- AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.
- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—L. A. Stone, C. & E. I. Ry., Chicago.
- AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 63 E. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 So. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 23-25, 1922, Kansas City, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 8 W. 40th St., New York.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borchert, 202 North Hamlin Avenue, Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Annual meeting, November, 1922, Division I—Operating.

Freight Station Section (including former activities of American Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section. J. C. Caviston, 75 Church Street, New York.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association). J. C. Caviston, 75 Church St., New York, N. Y.

Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y. Next meeting, March 21-23, Richmond, Va. Annual meeting, September 20-22, 1922, Colorado Springs, Colo.

Safety Section. J. C. Caviston, 75 Church St., New York.

Division II—Transportation (including former activities of the Association of Transportation and Car Accounting Officers). G. W. Covert, 431 South Dearborn St., Chicago, Ill.

Division III—Traffic. J. Gottschalk, 143 Liberty St., New York.

Division IV—Engineering. E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Next convention, March 14-16, Chicago. Exhibit of National Railway Appliances Association, March 13-16.

Construction and Maintenance Section. E. H. Fritch.

Electrical Section. E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association). H. S. Balliet, 75 Church St., New York, N. Y. Annual meeting, June 14-16, 1922, Monmouth Hotel, Spring Lake, N. J.

Division V—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 14-21, 1922, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association). V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.

Division VI—Purchases and Stores (including former activities of the Railway Storekeepers' Association). J. P. Murphy, General Store Keeper, New York Central, Collinwood, Ohio.

Division VII—Freight Claims (including former activities of the Freight Claim Association). Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichy, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Next convention, October 17-19, 1922, Cincinnati, Ohio. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. F. Jackson, Central of Georgia, Savannah, Ga. Annual meeting, May 10-12, 1921, Denver, Colo.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next convention, March 14-16, Chicago. Exhibit by National Railway Appliances Association, March 13-16.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division 5.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eiseman, 4600 Prospect Ave., Cleveland, Ohio. Annual convention, September 25-30, 1922, Detroit, Mich.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa. Annual meeting, June, 1922, Atlantic City, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York. Regular meetings 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, James Partington, American Locomotive Co., 30 Church St., New York. Next meeting, December 9, 1921, 29 W. 39th St., New York.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—George M. Hunt, Chemist, Forest Products Laboratory, Madison, Wis. Next meeting, January 24-26, Hotel Sherman, Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. R., St. Paul, Minn. Next meeting, May 17-19, 1922, Montreal.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreuccetti, C. & N. W. Ry., Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—D. J. Higgins, American Valve & Meter Company, 332 S. Michigan Ave., Chicago. Meeting with convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—W. A. Booth, 53 Rushbrooke St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, Mo.—Thomas B. Koeneke, 604 Federal Reserve Bank Bldg., St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2d Thursday in January, March, May, September and November, Hotel Iroquois, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILWAY CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Meetings, 2d Tuesday in February, May, September and November.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N.W., Washington, D. C. Annual meeting May 11, 1922, Railroad Club of New York.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division VII.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—C. H. Treichel, Grand Central Station, Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 1414, Manhattan Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—George P. White, 747 Railway Exchange, Chicago. Meeting with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1922, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—C. W. Sullivan, Garlock Packing Co., 326 W. Madison St., Chicago. Meeting with International Railway Fuel Association.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Annual convention, 1922, Buffalo, N. Y.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Next convention, May 23-26, 1922, Hotel Sherman, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division V.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division V.)

NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.—Warren C. Nixon, Western Tie & Timber Co., 905 Syndicate Trust Bldg., St. Louis, Mo. Annual meeting, January 26 and 27, Hotel Sherman, Chicago.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, People's Gas Bldg., Chicago. Annual exhibition, March 13-16, Chicago, at convention of American Railway Engineering Association.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3d Friday in month, except June, July and August, at 29 W. 39th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 315 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division IV, Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with A. R. A., Division V.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York.

RAILWAY TREASURY OFFICERS ASSOCIATION.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Annual convention, September 12-14, 1922, Cleveland, Ohio. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—H. S. White, 9 N. Jefferson St., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Marine Trust Building, Buffalo, N. Y. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Regular meetings, 3d Monday each month except June, July and August.

Traffic News

The Union Pacific and connecting lines have reduced freight train schedules from Chicago to Denver, and other Colorado points 24 hours.

On the recommendation of Governor Blaine of the state of Wisconsin the State Railroad Commission will make a detailed survey of utility and railroad rates with a view to possible reduction.

The Atlantic Coast Line has opened a freight office in Memphis, Tenn., with Walter M. Wharton in charge, as commercial agent. Mr. Wharton was formerly commercial agent of the Mobile & Ohio at Memphis.

Vigorous opposition to the granting of the petition of the transcontinental roads for lower through rates was voiced by manufacturers and jobbers at Denver, Col., on November 28, at a hearing before Attorney-Examiner William A. Disque of the Interstate Commerce Commission.

A report from Saskatoon says that a party of 1,000 Mennonites is about to leave Saskatchewan for Northern Mexico. The holdings of the Mennonites, amounting to 85,000 acres, are being purchased by a land company, which proposes to settle a colony of Poles there, to be brought from the United States.

The Interstate Commerce Commission has authorized the railroads in Southern classification territory to reduce rates on iron ore throughout the territory by the amount of the increase which was made on August 26, 1921. The southern roads asked for the permission so as to place them on equality with the carriers, in the north and east, that have recently made reductions in these rates.

The House committee on interstate and foreign commerce has voted to report favorably Senate bill 621 extending the time for the filing of straight overcharge claims against the Railroad Administration with the Interstate Commerce Commission. The bill was passed by the Senate on June 11. The House committee amended it to add six months time in order that claims may be filed up to September, 1922.

The Southern Traffic League, composed of the traffic bureaus of prominent Southern cities—Chattanooga, Atlanta, Birmingham, New Orleans, Charlotte, Jacksonville, Tampa, Savannah, Charleston and other places met at Atlanta this week to discuss plans to go before the Interstate Commerce Commission in Washington to show the commission that it is necessary to have a general percentage reduction in freight rates throughout the South.

The Chicago, Milwaukee & St. Paul will immediately reduce carload rates from all points on its lines in Wisconsin, Illinois, and Indiana, to Seattle and Tacoma, Wash., on classified commodities when destined to the Hawaiian Islands, to meet so far as possible the rates in effect via the Panama Canal. It is understood that the same rates will also be applied to the territory east of Chicago as quickly as arrangements can be made with eastern lines.

A special freight rate committee has been appointed by the Prepared Roofing Association, Chicago, with the following membership:—Chairman, R. S. Crawford, Certain-teed Products Corporation, New York; J. P. Brown, Barber Asphalt Paving Company, Philadelphia, Pa.; J. L. Roberts, Barrett Company, New York; Osborn Van Brunt, Certain-teed Products Corporation, St. Louis, Missouri; William A. Harris, Flintkote Company, Boston, Massachusetts; H. S. Loving, Ford Roofing Products Company, Chicago; and Arthur T. Cavey, Richardson Company, Cincinnati, Ohio.

The Interstate Commerce Commission has authorized the transcontinental railroads to put into effect on short notice a tariff of transcontinental joint rates on lumber and other forest products applicable from California, North Pacific and "Inland

"Empire" mills to destinations east of the Indiana-Illinois line, which will be 10 cents higher than the rates in effect on August 25, 1920, before the general advance made in Ex Parte 74. The filing of the new schedule represents an agreement on which the carriers in Central Freight, Eastern Trunk Line and New England rate territories have been having a controversy with the transcontinental lines for several months.

Reduced Rate for Marshal Foch

The Pennsylvania on November 22 filed with the Interstate Commerce Commission a special tariff providing for a reduced rate of fare for the transportation of Marshal Foch and members of his party on a tour through the United States and Canada ending at New York on December 12. The total charge for the trip will be \$35, which in general provides \$1 for each road participating in the movement.

A Satisfied Traveler

A man who has been a severe critic of the American railroads is just back from an 8,000-mile trip in which he visited about forty cities and journeyed from the Atlantic to the Pacific and from British Columbia to Southern Texas. Knowing the strain to which the railroads had been subjected in the war period, he expected to have his full complement of troubles. He had no troubles, practically no delays. He says: "In all the 8,000-mile trip the trains arrived on time in every instance but two. Once we were thirty minutes late. At another time nine minutes. Never did we know discomfort. The trainmen were helpful, kindly and courteous. And this was in the period when it seemed as if the whole Nation was to be tied up by a railroad strike. Nobody can make me believe that the railroad workers, from executives down to the tie tamper and the engine wiper, are not on the job as faithfully and conscientiously as ever."—Philadelphia Public Ledger.

General Rate Reduction in Canada

A general reduction of ten per cent in freight rates on all steam railroads in Canada went into effect on December 1, according to an announcement made by Chief Commissioner, F. B. Carvell. The order of the Railway Board followed a conference between the president and representatives of the Canadian National Grand Trunk and the Canadian Pacific, and the commissioners.

Chief Commissioner Carvell explained that the reduction was not a straight ten per cent off the present freight rates but was to be deducted from the increases in rates made effective by the order of the Board in December, 1920, when the increases of forty per cent in the East and thirty-five per cent in the West, made effective September 13, 1920, were reduced to 35 per cent in the East and 30 per cent in the West. The present order will further decrease freight rates to a basis of 25 per cent in the East and 20 per cent in the West above the rates effective prior to the first increase in September, 1920. Also there is a decrease in sleeping car and parlor car rates of one half of the increase granted in 1920.

New England Case Re-argued

Oral arguments on the application of the New England railroads to the Interstate Commerce Commission for an order requiring the lines west of the Hudson river to allow the New England lines increased divisions of through rates were heard before the commission on November 29, the case having been reopened for this purpose. The commission in deciding the case has declined to fix the divisions, but it directed the interested roads to appoint committees to try to work out the problem themselves. Representatives of the New England roads reported that very little progress was being made by these committees and are seeking to have the commission issue an order. Charles F. Choate, representing the New England lines, said that in enacting the transportation act Congress intended that without important exception, the railroads in existence and serving the public at that time should be allowed rates that would enable them to live and that the commission was authorized to adjust the increased revenues resulting from increases in the rates by groups. Until the commission issues a certificate au-

thorizing the abandonment of a road, he said, the intention is that it shall be allowed rates which will enable it to pay operating expenses and interest on the investment, at least. To increase the divisions of the New England lines in this case, he said, would not represent a taking away from the other lines of something that belonged to them before because when the commission was authorized to increase rates it was also given power to administer the use of the increased income and the rate divisions represent a vehicle for doing this. The traffic which produced the revenue, he said, is the joint product of the joint effort of the several lines and the sum of money to be realized by the increases in rates was calculated on the basis of the value and earning power of all the roads. Therefore, the amount of the increase constitutes a common fund to be equitably distributed among the roads.

Joint Congressional Committee to Report on Marketing and Transportation

The labor of more than 1,500 people, for a period of three months, is represented by the data now being compiled by the transportation division of the Joint Commission on Agricultural Inquiry, which will shortly present a report of its investigation on the marketing and transportation facilities of the country. Representative Sydney Anderson, chairman of the joint congressional commission, says that splendid co-operation is being given by railroads and shippers. Approximately 800 representatives of the railroads and 600 representatives of the shippers, in all sections of the country, are gathering information through various sub-committees. Compilation of operating costs and labor costs is included in the work, and a thorough study has been made of each medium of distribution. The committee aims to determine the basic facts of the relation of the railroads on the one hand and shippers and receivers on the other. The general committees have organized sub-committees, located in the producing and consuming regions, with reference to the movement of the particular products which they are studying. For instance, the general committee organized on fruits and vegetables has in turn appointed sub-committees in nearly every state and these sub-committees are studying the particular products in their section of the country. The railroads are organized in two groups, namely, traffic and organization, and the personnel of the executive traffic committee follows: H. M. Adams, Union Pacific, chairman; J. G. Woodworth, Northern Pacific; Edward Chambers, Atchison, Topeka & Santa Fe; T. C. Powell, Erie; Gerrit Fort, Boston & Maine; Archibald Fries, Baltimore & Ohio; Robert C. Wright, Pennsylvania; Lincoln Green, Southern; F. B. Bowes, Illinois Central; and J. L. Edwards, Atlanta, Birmingham & Atlantic.

Forty-four committees of shippers have been appointed to work in conjunction with the executive traffic committee of the railroads in securing data on the marketing and transportation facilities of the country under the direction of the transportation division of the commission. Included in their membership are: C. B. Hutchins, traffic manager of the American Farm Bureau Federation; F. E. Todd, vice-president of Deere & Co.; S. J. Lowell, master of the National Grange; R. D. Phillips, of the International Apple Shippers' Association; R. Cumming, of Chicago, representing fruits and vegetables, who is working in conjunction with E. G. Dezell, assistant manager of the California Fruit Growers' Exchange; and J. A. Campbell, of Youngstown, Ohio, president of the Youngstown Sheet & Tube Co. These committees, together with the representatives of the railroads, have been asked to complete their work by January 1, whereupon all data will be carefully reviewed and analyzed by an advisory committee, whose personnel will be announced shortly. There will be 12 members of this advisory committee, representing transportation, industry and agriculture.

HENRY W. GAINES, of Huntington, L. I., has traveled between that place and New York City, as a "commuter," every month since April 1, 1877, or about 44 years, six months. Mr. Gaines estimates that he has averaged 275 days a year, 70 miles a day, making his total mileage equal to more than 34 times around the earth at the equator. From his home to his office he spends two hours and the same on the return, so that he calculates that he has been traveling 48,950 hours during this time, or the equal of about five years, seven months.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until March 31, 1922, the operation of certain schedules which propose reductions in the carload rates on sugar from eastern cities to destinations in Central Freight Association Territory.

The commission has further suspended until January 12, the operation of schedules which propose to eliminate the application of the rates on lumber from points in southeastern territory to certain stations on the Norfolk & Western.

The commission has further suspended until January 7, the operation of all schedules published in a supplement to an Alabama & North Western tariff which provides for the cancellation of the existing commodity rate of 11½ cents per 100 lb. on lumber from points on the Alabama & North Western to Selma, Ala.

The Secretary of War, on behalf of the Mississippi-Warrior river waterways, now operated by the Division of Inland Transportation of the War Department, has filed an application with the Interstate Commerce Commission for joint through rates in connection with the railroads in practically every part of the United States.

The commission has further suspended until January 12 the operation of schedules published in a supplement to Agent R. H. Countiss' tariff which propose to increase from 6½ to 7 cents the charge for storage-in-transit on apples and pears at points in Official Classification territory, applicable on east-bound Trans-Continental traffic.

The commission has suspended from November 30 until March 30, 1922, the operation of schedules published by the Chicago & North Western which propose to increase from 10½ to 14 cents per 100 lb. the rates on grain and grain products carloads, between St. Louis, Mo., and stations on the Chicago & North Western in Illinois south of Peoria, Ill.

The commission has further suspended until January 31, 1922, the operation of proposed reductions in the existing rates on coal, carloads, from mines on the Detroit, Toledo & Ironton in Jackson County and Ironton (Ohio) districts, to Detroit, Mich., and other destinations on the same line in Ohio and Michigan, the operation of which was suspended until January 1, 1922, by orders previously entered.

By a supplemental order in Investigation and Suspension Docket No. 1431, the commission has suspended until April 30, the operation of schedules published in a Missouri, Kansas & Texas tariff, which propose increased rates on cotton and cotton linters from Ft. Smith, Greenwood, Shreveport and other places; and from stations on the Midland Valley Railroad in Arkansas to St. Louis, Kansas City, New Orleans, Galveston and various other places.

The commission has further suspended until January 22 the operation of schedules published in Agent E. B. Boyd's tariff which propose increased and reduced rates on potatoes, carloads, from producing points in Minnesota, Wisconsin and the upper peninsula of Michigan to destinations in Central Freight Association and Trunk Line territories, the operation of which was suspended until December 23, 1921, by an order previously entered.

The commission has further suspended until January 7 the operation of certain schedules published in Agent W. J. Kelly's Exceptions to the Official Classification which provide that the estimated weight on crude petroleum from points in C. F. A. territory originating at points in Texas and destined to points in Official Classification territory (except to points in Canada) will be 7.4 pounds per gallon, in lieu of the existing estimated weight of 6.6 pounds per gallon, the operation of which was suspended until December 8, by an order previously entered.

Rates on Wool and Mohair to Boston

The commission has issued its decision in the case of the Boston Wool Trade Association vs. Abilene & Southern, et al., in which the commission prescribes reasonable classification ratings on wool, mohair, camel's wool and hair, angora hair and alpaca. The proportional commodity rates to Boston on wool in the grease in carloads from Mississippi river crossings were not shown to be unreasonable, but proportional commodity rates to Boston from Duluth, Minn., lake and rail, on wool and mohair in the grease were found unreasonable and a reasonable basis of maximum rates was prescribed. The commodity rates to Boston from Texas points, all rail, on wool and mohair in the grease in carloads were found unreasonable and a reasonable basis of maximum rates was prescribed. Consideration of fourth section applications was postponed. The failure of the railroads to accord transit at Boston on wool and mohair originating west of the Hudson river and to publish consolidated wool tariffs was found to be not unreasonable or otherwise unlawful.

Commission Reopens Rate Division Cases

The Interstate Commerce Commission has ordered the reopening of two cases involving the application of "short line" railroads for orders by the commission increasing the divisions of through rates accorded them by their connections. These are cases initiated by the Wichita Northwestern and the Federal Valley. They are reopened for further hearing, particularly for the submission of additional evidence to show: (a) the value of the complainant's railroad property used in the service of transportation; (b) revenues and expenses from January 1, 1921, to date of hearing, by months; (c) total tonnage transported from January 1, 1921, to date of hearing, by months; (d) tonnage of grain, lumber, coal and miscellaneous freight transported from January 1, 1921, to date of hearing, by months; (e) financial state as of date of hearing.

The cases will be heard before Examiner Carter at Washington on December 12. Hearing in the Federal Valley case vs. the Toledo & Ohio Central and others was held by the commission on September 30 and officers of the American Short Line Railroad Association presented arguments urging a decision by the commission which would establish a general rule to carry out what they conceive to be the purpose of the transportation act by forcing trunk line connections to accord to originating short lines divisions sufficient to represent the cost of handling traffic taking into consideration the low density of an originating line, and also a fair return on the value of the property. It was stated that as the trunk lines have not been receiving 6 per cent, it would not be contended that under all circumstances the short lines should receive that rate of return. The general idea was held forth that the commission should order established divisions sufficiently high to more nearly equalize conditions between railroads.

It was stated that the short lines had tried to persuade the trunk lines to agree on a general rule for calculating divisions, but that they had thus far been rather unsuccessful in the negotiations with the trunk lines and hoped the decision of the commission would establish a precedent that could be used in other cases.

State Commissions

Hearings on a petition filed by the Michigan Manufacturers' Association asking for a general reduction in freight rates will be heard on December 6, by the Michigan Public Utilities Commission at Lansing, Mich.

Court News

Loss of Freight Intended for

Nonadjacent Foreign Country

Eight carloads of grain were destroyed in accidents while in course of transportation to Baltimore from points in Nebraska, Michigan, Indiana and Ohio. The railroad on whose line the losses occurred paid the owners, the purchasers of the grain, its value at the time and place of shipment. This was the measure of damages under the bills of lading, but it did not fully

compensate the owners for the actual loss. The railroad's liability could not be restricted unless the grain was intended for export to a foreign country not adjacent to the United States. In an action by the owners against the railroad, it was conceded that the grain was to be unloaded at Baltimore into the railroad's elevators and loaded therefrom into vessels for export to Europe. The bills of lading themselves disclosed that the shipments were for export. The plaintiffs' purpose, as shown by their testimony, was to ship it to Europe. The Maryland Court of Appeals holds that the shipments were in course of transportation to a nonadjacent foreign country at the time of their destruction, and that the measure of damages stipulated in the bills of lading was not contrary to the provisions of the Federal Act to Regulate Commerce and its amendments, prohibiting stipulations against recovery of less than the full amount of the actual loss or damage to property in transit from one state to another, or for export to an adjacent foreign country. The purchase of the bills of lading while the grain was in transit merely affected the title to the shipments, and made no change whatever in its movement or destination or in any of its commercial characteristics.

The railroad company was not estopped from relying on the limitation of liability provision in the bills of lading because the consignees were not given notice of the loss until long after the shipment was due to arrive, although the replacement value of the goods was higher when notice of loss was finally received. If the shipments had been lost after a delay, however prolonged, in transportation, the limitation of liability would have applied; therefore delay in giving notice of the loss could not enlarge the measure of damages.—*Farley v. Baltimore & Ohio* (Md. App.) 114, Atl. 905.

Decisions Under Federal Employers' Liability Act

Where an employee was injured while the railroad was engaged in interstate commerce, and while the employee was also so engaged, the Circuit Court of Appeals, Third Circuit, holds that it is immaterial to his right of recovery under the act whether or not another employee, who committed the act of negligence which was the cause of the injury, was then employed in interstate commerce. The act of negligence of the other employee was the careless placing of another car on the switch, with which that on which the plaintiff was employed came in collision. The court, treating this as "a novel proposition," holds that "the test of an employer's engagement in interstate commerce within the meaning of the statute is not the character of its engagement at the time of the commission of a negligent act, when not contemporaneous with the injury, but it is the character of its engagement at the time of the consequent injury to its employee." The employer's negligence here consisted not only in negligently placing the car, but in operating a train of cars in interstate traffic toward and against it.—*Hines v. Keyser*, 268 Fed. 772.

Where an employee, engaged in interstate commerce employment, on leaving his work, selects a dangerous way to leave the yard where the employer has provided a safe way out, he loses the status of an employee in interstate commerce, and when he is subsequently killed by a train while crossing the main track, there can be no recovery for his death under the Employers' Liability Act.—*Krysiak v. Pennsylvania*, C. C. A., 8th Circ., 270 Fed. 758.

The Supreme Court of the State of Washington holds that a trackman on the main line of a company engaged in interstate commerce, who left the section, under the direction of the foreman, to accompany the foreman on a motor car to another town to get supplies, could not recover, under the act, for injuries caused by the derailment of the motor car, it being contrary to the company's rules to leave the section during working hours.—*Adams v. Hines* (Wash.) 196 Pac. 19.

The Pennsylvania Supreme Court holds that an employee in charge of an oil tank from which oil, etc., for engines and cabooses of both interstate and intrastate trains were supplied with oil, but who did not distribute the oil, injured when opening a valve on a tank car to permit the oil to run into the tank, was not engaged in interstate commerce.—*Lindway v. Pennsylvania Co.* (Pa.) 112 Atl. 40.

The New Jersey Court of Errors and Appeals holds that a car repairer working on a car which was entirely out of commission and was not being used for any purpose whatever, was not engaged in interstate commerce within the act.—*Herzog v. Hines* (N. J.) 112 Atl. 315.

Foreign Railway News

Eight-Hour Day Abolished in South Africa

The Southern African Railways have abandoned the eight-hour day for certain classes of employees, effective September 5, according to the Railway Gazette (London). The railways have accumulated a deficit of some \$15,543,791 since the fiscal year 1917-1918. The eight-hour day is estimated to cost some \$4,860,000 annually. In lengthening the work-day the management endeavored to take into consideration the intensity and continuity of the work done. The employees affected and the length of the new work-day for them are enginemen and firemen, nine hours; ticket examiners and trainmen, ten hours. Overtime will be paid for at 1½ rate. The duties of other employees will be considered and further adjustments made, but no hours will be increased beyond twelve, including times for meals, and where the work is exacting the present 48-hour week will be maintained.

New General Manager of North Eastern (England)

R. L. Wedgwood, C. B., C. M. G., has been appointed general manager of the North Eastern Railway (England), effective January 1, 1922, according to the Railway Gazette (London). Mr. Wedgwood was born in 1874, and was educated at Cambridge University. He entered the service of the North Eastern in 1896. In 1902 he was appointed district superintendent, and in 1904 he served for a short time as secretary of the company. In 1905 he was appointed to an official position in the goods (freight) department, and by various promotions to chief goods manager in 1911. Mr. Wedgwood served in various important military transport positions in the British army during the war, attaining the rank of brigadier-general, and in 1919 returned to the North Eastern in his former capacity as well as passenger manager and deputy general manager, which position he held at the time of his recent promotion.

Proposed Reorganization of French Railways

A plan has been elaborated which aims at raising the general efficiency of all the railroads in France as regards national service, by bringing about the closest co-operation possible among the different lines, a standardization of rates all over the country, and financial solidarity for the French railway system as a whole.

According to advices received by the Bankers Trust Company of New York from its French information service the main features of this proposed new regime are: 1—The creation of a common central organization destined to co-ordinate the methods of operation on the different roads in the best interests of the nation as a whole; 2—The creation of a board of management which will study questions interesting the general railroad system, and act as "liaison" between the central administrative organization and the individual lines.

This central organization, which is to be called the Superior Council of Railways, will be composed of 30 representatives chosen by the Minister of Public Works from the nation's most important interests (shipping, industry, etc.), 12 representatives elected by the railroad employees and 18 representatives of the railway administration (2 directors and the general manager from each of the 5 existing private companies, and the president, vice-president and manager of the state railway).

The "board of management" will consist simply of the 18 representatives of the railway administration who are members of the Superior Council, and both the board of management and the Superior Council of Railways will be under the authority of the Ministry of Public Works.

The basic principle of an "association of interests" between the state and the railway companies which has been characteristic of the French system since its very earliest days, will be maintained and still further developed in the new regime, whose most salient feature is that through a unification of administrative policy the railways are to be put at the service

of the nation in the shape of a single system of transportation. Another clause in the financial provisions of the proposed new regime specifies that out of the gross receipts of each line will be deducted the necessary amount for payment of: 1—The operating expenses; 2—The charges accruing from interest on capital and loans of all kinds; 3—A sum representing the total amount of the fixed dividends which are now called "guaranteed"; 4—The premium, if any, which may be compared to the extra dividend now called "reserved."

It is also proposed by the terms of this new regime that all war liabilities be cancelled and that the state restore the railroads to pre-war conditions, it being understood that the companies abandon any outstanding claims they may have against the state.

Improvement in French Cab Signals

Jean Aumont, a French engineer, in a brief article in the Bulletin of the International Railway Association for October, page 1684, says that the roadway member, for use with audible cab signals (known as the "crocodile") has been greatly improved by the adoption of a new design. It is made hollow, and, in cold weather, is kept covered, on its upper surface, with oil, thereby forestalling failures, which have been troublesome, due to the presence of frost on the metal. The new design is called the "J. Colas anti-frost system."

This "crocodile" is a flattened tube, about 6 ft. long, resting on insulated supports between the rails. It is pierced on its upper surface with numerous holes. In each hole is a tube and a piece of felt through which the oil rises by capillary attraction. A gallon of oil lasts more than a year. When the engine contact-piece touches the "crocodile," the film of ice, which is on the surface of the oil, is scraped off and it is said that perfect electrical contact is secured under all circumstances.

In this system the engine contact piece is a brush made of steel threads, said to last more than a year, where copper brushes have been worn out in three months. The system has been tried, it is said, on the Paris & Orleans Railway, not alone for distant signals but also arranged to warn postal clerks, on trains, when they are approaching a station; and also to warn the station attendant of the approach of the train.

Mr. Aumont says that, with modifications, the "crocodile" system has been adopted on the majority of the railways of France. On the Northern Railway it has been in use 45 years.

HARD COAL has been discovered at Latchwood, Ontario, about 25 miles northwest of Sudbury; and a Toronto syndicate has leased 20,000 acres surrounding the discovery. Miners are on the ground stripping and sinking test pots to determine the exact extent of the find.

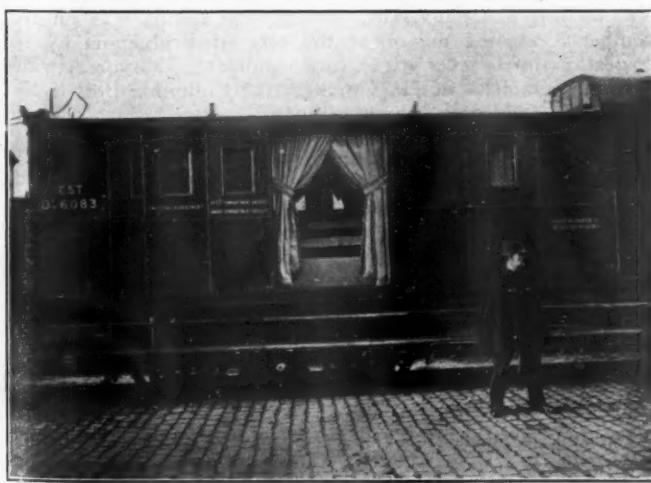


Photo by Keystone

The American "Unknown Soldier" Lying in State at St. Lazare Station, Paris, en Route to Havre

Equipment and Supplies

Locomotives

THE CARNEGIE STEEL COMPANY is inquiring for 1 locomotive.

THE NEW YORK, ONTARIO & WESTERN is inquiring for from 3 to 6 Mountain type locomotives.

THE ATLANTIC COAST LINE has ordered 1, 4-6-0 type locomotive from the Baldwin Locomotive Works.

THE VICKSBURG ROUTE will have repairs made to 3 Santa Fe type locomotives at the shops of the Baldwin Locomotive Works:

THE DOLBEER & CARSON LUMBER COMPANY, Eureka, Cal., has ordered 1 Prairie type locomotive from the Baldwin Locomotive Works.

MITSUI & COMPANY, New York, is inquiring for 5 Mogul locomotives for export to China, also for 4, 6-wheel tank locomotives for export to Japan.

THE HAVANA CENTRAL has ordered from the Baldwin Locomotive Works 10 locomotive boilers and fire boxes for Mogul and Consolidation type locomotives.

THE SEABOARD AIR LINE, reported in the *Railway Age* of August 20, as inquiring for 28 locomotives has ordered from the American Locomotive Company 10 Mountain type locomotives to have 27 by 28 in. cylinders and a total weight in working order of 315,000 lbs. and 15 Mikado type locomotives to have 27 by 30 in. cylinders and a total weight in working order of 284,000 lbs. All these locomotives will be equipped with super-heaters.

Freight Cars

THE BUFFALO, ROCHESTER & PITTSBURGH is inquiring for from 20 to 30 caboose cars.

THE FRUIT GROWERS' EXPRESS is inquiring for 100 steel under-frames for refrigerator cars.

THE NEW YORK CENTRAL contemplates asking for prices on 1,000 box cars, of 50-ton capacity.

THE NORTHERN PACIFIC is inquiring for 1,200 center frame constructions for gondola and box cars.

THE BUFFALO, ROCHESTER & PITTSBURGH has given a contract to the Buffalo Steel Car Company for the repair of 500, 50-ton hopper cars.

THE CRESAPEAKE & OHIO is asking for bids until 12 o'clock noon, December 15, at Richmond, Va., for repairing 500 more or less steel coal cars.

THE MISSOURI PACIFIC has awarded a contract for the repair of 500, 30-ton box cars to the Sheffield Car & Equipment Company, Kansas City, Mo.

THE UNION PACIFIC is inquiring for 500, 40-ft. double sheathed box cars of 50-ton capacity and expects to be in the market soon for 46-ft. automobile cars and 50-ft. all steel automobile cars, also for refrigerator cars.

THE VIRGINIAN RAILWAY, reported in the *Railway Age* of October 29, as inquiring for prices on the repair of 4,000 freight cars, has given a contract to the Virginia Bridge & Iron Company, Roanoke, Va., for the repair of 1,500, 50 to 55 ton all steel coal cars.

THE BALTIMORE & OHIO, reported in the *Railway Age* of September 10, as inquiring for prices on car bodies, has ordered 500 hopper car bodies from the Pressed Steel Car Company, and 500 from the Standard Steel Car Company, all to be of 55-ton capacity.

Passenger Cars

The NEW YORK CENTRAL is asking for prices on the repair of 1,000 passenger cars.

Iron and Steel

The TEXAS & PACIFIC has ordered 15,000 tons of rail from the United States Steel Corporation.

The ATLANTIC COAST LINE has ordered 15,000 tons of rail from the United States Steel Corporation.

THE CHICAGO UNION STATION will accept bids until December 1, for 3,600 tons of steel to be used in the widening of Canal street, from Jackson boulevard to Washington street, and the Monroe street viaduct, Chicago.

Machinery and Tools

THE UNION RAILROAD OF PITTSBURGH has ordered a radial drill, a lathe and a planer from the Niles-Bement-Pond Company, New York.

THE NEW YORK CENTRAL has bought from the government stock at Hog Island, two lathes for use at the enginehouse at Solvay, N. Y.; one Reed-Prentice 24 in. lathe, and one Le Blond lathe, 16 in.

Miscellaneous

THE NORFOLK & WESTERN is asking for bids until 12 o'clock noon, December 15, at Roanoke, Va., for electrical material; 400 rods wire fencing; 300,000 tie dating nails, and 25,000 lb. steel shapes.

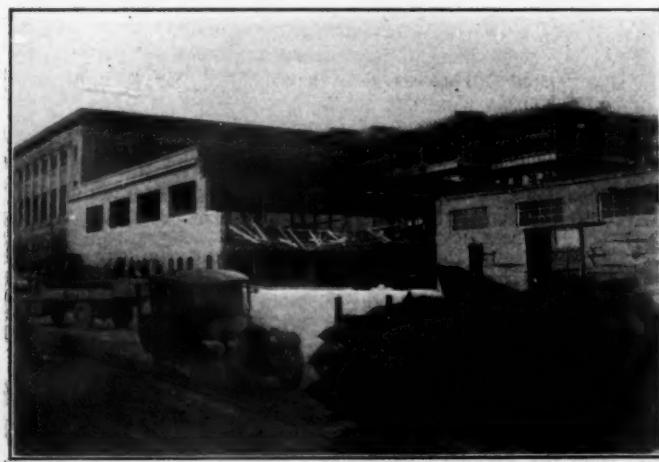
ALL THE 50 Santa Fe type locomotives being built by the Baldwin Locomotive Works for the Southern Pacific are to be equipped with the locomotive booster, made by the Franklin Railway Supply Company, New York.

THE SOUTHERN PACIFIC is having the 50 Santa Fe type locomotives now being built by the Baldwin Locomotive Works equipped with open type combined feed water heaters and pumps made by the Worthington Pump & Machinery Corp., New York.

Signaling

THE ATCHISON, TOPEKA & SANTA FE contemplates the installation of automatic block signals between Olathe, Kan., and Le Loup, 25 miles; Neva, Kan., and Cedar Point, — miles; New Boston, Iowa, and Dumas, Mo., 9 miles; Nersko, Ill., and Willow Springs, 10 miles; Las Vegas, N. M., and Sands, 34 miles; Shirley, Cal., and Calwa, 20 miles; Corona, Cal., and Atwood, 15 miles, and Caldwell and Temple, Tex. 61 miles.

* * * *



Union Station, St. Paul, in Course of Construction

Supply Trade News

The Rich Tool Company, Chicago, has appointed the Busch Corporation, St. Louis, Mo., its representative in the St. Louis territory.

Arthur P. Bowen, formerly director of purchases of the Pullman Company, has been elected vice-president of the Ryan Car Company, Chicago.

R. W. Levenhagen, vice-president of the Glidden Company, Cleveland, Ohio, has recently assumed direct charge of the sales policies and sales activities of the Glidden organization.

The Arcola hot water apparatus is to be used to heat the 23 passenger cars of the Piedmont & Northern, an electric road 127 miles long, in North Carolina and South Carolina. Anthracite coal will be used. Hitherto the cars of this line have been heated by electricity.

J. F. Kelly, Jr., has been appointed export sales manager of the Electric Storage Battery Company, Philadelphia, Pa. Mr. Kelly will have his headquarters at 23 West Forty-second street, New York City.



J. F. Kelly, Jr.

He joined the Electric Storage Battery Company in 1909 and has been in the service of this company continuously except during the period of time he spent in military service. He was commissioned a captain in the United States army in November, 1917, at the Plattsburgh Training Camp and was assigned for duty as officer in charge at the army supply base, at Port Newark, N. J., serving until his release in January, 1919. Mr. Kelly has spent considerable time with officers of the railroads

in Australia, Argentina and Brazil, having recently returned from a two years' trip around the world in the interests of the Electric Storage Battery Company.

Fred Atwater, vice-president and treasurer of the Columbia Nut & Bolt Company, Inc., Bridgeport, Conn., was on November 8, elected mayor of the city of Bridgeport by the largest majority ever given any candidate. Mayor Atwater will still retain his connection with the Columbia Bolt & Nut Company, Inc., with which company he has been associated since 1902.

John L. Artmaier, eastern sales manager of the Buda Company, in charge of the New York office, has been appointed sales manager of the railroad department of the company, with headquarters in the Railway Exchange building, Chicago. J. E. Murray, formerly assistant to Mr. Artmaier, has been appointed eastern sales manager and J. H. Maher, formerly representing the company at Buenos Aires, Argentine, has been appointed eastern export manager.

F. N. Bard, vice-president and treasurer of the Barco Manufacturing Company, Chicago, has been elected president, succeeding George M. Bard, who has been elected chairman of the board of directors. C. L. Mellor, sales manager, succeeds F. N. Bard as vice-president and will also act as secretary, F. N. Bard retaining his duties as treasurer. Frank H. Stiles, formerly mechanical representative at Boston, Mass., has been appointed district sales manager with the same headquarters. Mr. Stiles, previous to entering the service of the

December 3, 1921

Barco company, was with the New York, New Haven & Hartford. Arthur S. Lewis, mechanical representative at New York, has been appointed district sales manager with the same headquarters.

Wm. Bosworth has resigned as assistant engineer in charge of contracts and production of the Underfeed Stoker Company of America, Detroit, Mich., to become mechanical engineer of the Wine Railway Appliance Company, Toledo, Ohio. Mr. Bosworth's experience has been almost entirely railway mechanical engineering, he having served as mechanical engineer on several steam railroads until he went to the Underfeed Stoker Company about three and a half years ago.

Superheater Company Forms French Connection

Geo. L. Bourne and Fred A. Schaff, president and vice-president, respectively, of the Superheater Company, New York, have just returned from Paris where they have formed as a French connection the Compagnie des Surschauffeurs, which has been given full rights for the sale and manufacture of the "Elesco" superheaters and forged return bends controlled by the Superheater Company.

This new French company brings together interests prominently associated with superheating in France, the board of directors being Ad. Seghers, A. Fiedler, S. Magis, Capt. F. R. Fitzpatrick and Geo. L. Bourne. Capt. Fitzpatrick will represent the American interests in the company, and will reside in Paris as a resident director. Ad. Seghers, has, for 20 years, been identified with superheating in France. A. Fiedler represents the Basse Loire group, comprising the Usines Métallurgiques de la Basse Loire, Société des Forges et Acieries du Nord et de l'Est, Ateliers et Chantiers de Bretagne, etc., and is, himself, managing director of the L'Auxiliaire des Chemins de Fer & de l'Industries, manufacturers of the Caille Poterie feed-water heater, high temperature pumps, etc. A. Magis is a member of the firm of Magis et Dumortier of Brussels, dealers in railway supplies.

The Compagnie des Surschauffeurs is located at 11 Rue Scribe, Paris, France. A plant has been established in the outskirts of Paris for the manufacture of all types of superheaters where the forged return bends will be made, a battery of the special machines used for manufacturing these return bends having been already ordered from the Superheater Company's plant in Chicago.

Obituary

W. P. Hawkins, formerly fuel agent of the Missouri Pacific and for four years president of the Western Coal & Mining Company, died on November 23, at St. Louis, Mo.

B. C. D. Stafford, of the Flannery Bolt Company, Pittsburgh, Pa., died on November 30 at Atlantic City, N. J., after a long illness.

Trade Publications

VALVES.—The Pratt & Cady Co., Inc., Reading, Pa., has issued catalogue No. 6, 161 pages illustrated and bound in cloth descriptive of the brass and iron body valves and asbestos packed cocks manufactured by this company. The text includes full information relative to the different types and tables of sizes, prices and fittings.

OIL ENGINES.—An illustrated booklet of 22 pages has recently been issued by the Vacuum Oil Company, New York, which treats of the construction, operation and lubrication of oil engines of the surface ignition type. The text covers all of the important points in connection with this class of engines and covers in detail such problems as classification of types, the fields of service, principles of construction and operation, cooling, fuel, methods of lubrication, lubricating oils and deposits. The illustrations show various types and parts of engines, as well as the various steps in the cycles of operation.

REFRIGERATOR CARS are now being placed on the railroads in Latvia, out of Riga, the capital, running to various important points.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company which was noted in the *Railway Age* of November 19, as contemplating the construction of three oil storage tanks at Argentine, Kansas, will accept bids for this work until December 3.

CENTRAL OF GEORGIA.—This company closed bids on December 1, for the construction of a 500-ton concrete coaling station to be erected at Columbus, Ga.

CHICAGO & NORTH WESTERN.—This company contemplates the extension and improvement of its car and locomotive shops at Winona, Minn., at an estimated cost of approximately \$500,000. While preliminary plans have been drawn, no definite time has been set for the commencing of this work.

CHICAGO, BURLINGTON & QUINCY.—This company will construct a line of railroad extending from Hardin, Mont., on its main line, into the Soap Creek oil field area, a distance of about 30 miles. Surveys for this work have recently been started. This company contemplates ultimately extending this line further north into the Soap Creek Valley, a distance of 14 miles to open an area where the Holly Sugar Corporation has a large acreage of sugar beet land.

CHICAGO, PEORIA & ST. LOUIS.—This company will reconstruct its freight station at Havana, Illinois, which was destroyed by fire on November 18.

CHICAGO UNION STATION.—This company, which was noted in the *Railway Age* of November 19 (page 1016), as accepting bids for 2,600 sq. yds. of concrete track slabs, has awarded the contract for that work to W. J. Newman & Company, Chicago.

ILLINOIS CENTRAL.—This company, which was noted in the *Railway Age* of October 8 (page 695) as applying to the war department for permission to double track its bridge across the Ohio river at Cairo, Ill., at an estimated cost of \$8,482,000, has received the government's approval for this work, and contemplates commencing construction on the project soon.

ILLINOIS CENTRAL.—This company, which was noted in the *Railway Age* of November 26 (page 1069), as receiving bids for the construction of a new freight house and the enlarging of its passenger depot at West Frankfort, Ill., has awarded a contract for this work to the Zitterell Construction Company, Webster City, Iowa. The same company has awarded a contract to M. L. Windham, Centralia, Ill., for the construction of a track 1 1/4 miles long to extend from a point on the main line to the Shamrock coal mine, near Providence, Ky.

MISSOURI PACIFIC.—This company contemplates the improvement and enlargement of its station at Newport, Ark., at an estimated cost of \$10,000.

OSAGE RAILWAY COMPANY.—This company has applied to the Interstate Commerce Commission for permission to construct about 11 miles of railroad extending from Foraker, Okla., to the Osage County oil field in that state.

RED LAKE NORTHERN CONSTRUCTION COMPANY.—This company, which is located at Bemidji, Minn., contemplates the construction of a 130-mile logging railroad to run northwest from Redby, Minn., through the Red Lake Indian reservation, and through Grygia to Roseau, and South Junction, on the Canadian border. It has been estimated that the construction and grading of this line will cost about \$2,000,000. Plans are now under way to commence 13 miles of this work during December.

SOUTHERN PACIFIC.—This company contemplates the construction of a levee fronting its yard trackage at Algiers (New Orleans), La., estimated to cost \$185,000. It is expected that the Orleans Parish Levee Board will pay the Southern Pacific \$25,000 in consideration of the public interest in the levee. A proposal substantiating this viewpoint has been submitted to the attorneys of the two organizations for preparation of a formal agreement.

Railway Financial News

ALABAMA GREAT SOUTHERN.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue \$1,232,000 of first consolidated mortgage 5 per cent gold bonds, payable December 1, 1943, to be held in the treasury.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$955,000,000 of first and general mortgage 5 per cent gold bonds to reimburse the treasury for money expended from income. It is not proposed to sell the bonds at this time but authority is asked to pledge them from time to time as collateral for short term notes.

COWLITZ, CHEHALIS & CASCADE.—*Granted Loan from Revolving Fund.*—The Interstate Commerce Commission has granted in part an application of this company for a loan from the revolving fund to assist it in meeting maturing indebtedness and for some additions and betterments. The amount of the loan is \$45,000 for five years.

DELTA SOUTHERN.—*Sale Ordered.*—Judge Edwin Holmes, of the United States District Court at Jackson, Miss., has ordered the sale of this road at Greenville, Miss., on December 5. The Interstate Commerce Commission recently authorized the Delta Southern to abandon its line of 52 miles in Mississippi.

DULUTH, MISSABE & NORTHERN.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$1,174,000 of general mortgage 5 per cent gold bonds for the purpose of refunding a like amount of its first division bonds due January 1, 1922. It is expected that most of the bonds will be exchanged.

LEAVENWORTH & TOPEKA.—*Authorized to Issue Stock.*—This company has been authorized by the Interstate Commerce Commission to issue \$52,175 of common stock to the Leavenworth & Topeka Railroad Aid Benefit Districts of Leavenworth and Jefferson counties, Kansas, in exchange for a like amount of aid bonds.

LOUISIANA & PACIFIC.—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon a branch line from Longville to Vandercook, La., 5.5 miles.

NEW YORK, CHICAGO & ST. LOUIS.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$1,008,000 second and improvement mortgage 6 per cent gold bonds, series A, and \$3,027,000 of similar bonds, series B, and to pledge any part as collateral security for short term notes and as security for a note for \$1,000,000 to be given the director general of railroads on account of additions and betterments made to the company's property during federal control.

PENNSYLVANIA.—*Application to Control P. C. C. & St. L.*—The Interstate Commerce Commission has issued an order in connection with the application of this company for authority to acquire control of the Pittsburgh, Cincinnati, Chicago & St. Louis, giving leave to L. Kemp Duval to intervene, and a hearing on the petition filed by Mr. Duval has been ordered to be held at Washington on December 13 before an examiner.

PORT READING.—*New Directors.*—Robert L. Russell and Charles W. Ewing have been elected directors to succeed W. I. Brocklehurst and W. G. Brown, deceased.

SARATOGA & ENCAMPMENT.—*Control by Union Pacific.*—See Union Pacific.

UNION PACIFIC.—*Asks Authority to Acquire Road.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Saratoga & Encampment, which runs with a connection of the Union Pacific at Walcott, Wyo., to Encampment, a distance of 44.77 miles.

WESTERN PACIFIC.—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue \$3,000,000 of first mortgage bonds, to be sold at not less than 94, the proceeds to be applied mainly to the redemption of equipment notes.

Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts: Los Angeles & Salt Lake, \$800,000; Akron Union Passenger Depot Company, \$14,000. Short Line railroads, Lorama Railroad, \$2,350.

More Equipment Certificates Sold

The director general of railroads has, with the consent of the president, confirmed additional sales, at par plus accrued interest, of railroad equipment trust certificates now held by the government as follows:

Alabama Great Southern, 1922 to 1935, inclusive.....	\$154,060
Atlantic Coast Line, 1922 to 1921, inclusive.....	1,275,900
Chicago, Northwestern, 1922 to 1924, inclusive.....	1,994,700
Pittsburgh, McKeesport & Youghiogheny, 1922 to 1927, inclusive.....	1,129,800
Richmond, Fredericksburg & Potomac, 1922 to 1927, inclusive.....	393,600
Virginia Railway, 1928 to 1935, inclusive.....	869,600
Total amount of these sales is.....	\$5,817,600

The sales were arranged by Eugene Meyer, Jr., managing director of the War Finance Corporation. The total amount of equipment trust certificates sold by the government to date, at par plus accrued interest, is \$120,068,300.

Dividends Declared

Atlantic Coast Line.—\$1.50 quarterly, payable December 10, to holders of record December 1.

Chicago, Rock Island & Pacific.—Six per cent preferred, 3 per cent, semi-annually, seven per cent preferred, 3½ per cent, semi-annually; both payable December 31 to holders of record December 9.

Erie & Pittsburgh.—\$0.87½, quarterly, payable December 10 to holders of record November 30.

Fonda, Johnstown & Gloversville.—Preferred, 1½ per cent, quarterly, payable December 15 to holders of record December 10.

New York, Philadelphia & Norfolk.—\$3, payable November 30 to holders of record November 15.

Pittsburgh, Ft. Wayne & Chicago.—Common, 1¾ per cent, quarterly, payable January 2 to holders of record December 10; preferred, 1¼ per cent, quarterly, payable January 23 to holders of record December 10.

FIVE MEN were arrested at Indianapolis, Ind., on November 25, charged with the hold-up of the Illinois Central train near Paxton, Ill., on the night of November 7. Three of the suspects are negroes.

THE CANADIAN ROBERT DOLLAR COMPANY plans next year to add two large freighters to its present fleet. One will be added to the round-the-world service and one to the Vancouver-Orient line. This will permit Oriental trips at 30-day intervals.



Photo by International

Illinois Central Mail Car After Bandits Had Set Fire to Its Contents

Railway Officers

Financial, Legal and Accounting

J. C. Ellington has been appointed to the newly created position of real estate agent of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago.

Operating

A. T. Mercier, whose election as general manager of the San Diego & Arizona, with headquarters at San Diego, Cal., was announced in the *Railway Age* of November 26 (page 1071), was born at New Orleans, La., on December 11, 1881, and was educated at Rugby Academy and Tulane University where he completed a course in civil engineering in 1903. He entered railroad service in January, 1904, as transit man and clerk to a roadmaster of the Southern Pacific, with headquarters at Los Angeles, Cal. He was soon promoted to assistant gang foreman with the same headquarters, which position he held until February, 1906. From



A. T. Mercier

February, 1906, to March, 1907, he was assistant engineer in charge of reconstruction work on the Colorado River territory, with headquarters at Los Angeles; from March, 1907, to June, 1907, he was general foreman and engineer of bridges and buildings in charge of steel bridge construction, with the same headquarters; from June, 1907, to November, 1908, he was engineer and general foreman in charge of terminal construction work, with headquarters first at San Pedro, Cal., and later at Los Angeles; from November, 1908, to November, 1911, he was assistant division engineer of the Los Angeles division, with headquarters at Los Angeles; from November, 1911, to November, 1912, he was assistant district engineer of the Southern district with the same headquarters; from November, 1912, to August, 1913, he was division engineer of the San Joaquin division, with headquarters at Bakersfield, Cal.; from August, 1913, to February, 1917, he was division engineer of the Los Angeles division, with headquarters at Los Angeles; from February, 1917, to September, 1918, he was assistant superintendent of the Shasta division, with headquarters at Dunsmuir, Cal.; and in September, 1918, he was promoted to superintendent of the Portland division with headquarters at Portland, Ore., which position he was holding at the time of his recent change.

J. D. McCully, trainmaster of the Atchison, Topeka & Santa Fe, with headquarters at San Bernardino, Cal., has been promoted to division superintendent with headquarters at Winslow, Ariz., succeeding W. Mathie, who was killed in an accident as noted in the *Railway Age* of November 26 (page 1061).

W. F. Farrier, trainmaster of the Los Angeles & Salt Lake, with headquarters at Salt Lake City, Utah, has been promoted to safety agent, with headquarters at Los Angeles, Cal., succeeding G. H. Wright, who has been assigned to other duties. **J. T. Wardenburg**, trainmaster, with headquarters at Milford, Utah, will succeed Mr. Farrier, who will be succeeded by **W. R. Spettigue**, chief clerk to the superintendent of the Salt Lake division.

Executive

J. M. Rapelje, general manager of the Northern Pacific with headquarters at St. Paul, Minn., has been promoted to vice-president in charge of operation and maintenance, succeeding W. T. Tyler, who has resigned to enter business. Mr. Rapelje was born at Chippewa, Ontario, on January 22, 1857. He began railway work in August, 1879, as a brakeman on the Grand Trunk and shortly thereafter became a fireman on the Atchison, Topeka & Santa Fe. From May, 1882, to November, 1887, he was a conductor on the Canadian Pacific and then, until 1898, was a conductor on the Yellowstone division of the Northern Pacific. He was then appointed trainmaster and subsequently served as a conductor until June, 1902, when he was reappointed trainmaster of that division. From April, 1905, to July, 1908, he was superintendent of the same division and, from the latter date to May, 1910, was superintendent of the Rocky Mountain division. He was then transferred to the Idaho division, where he remained until 1912, when he was appointed general superintendent of the lines from Mandan, N. D., to Paradise, Mont. In May, 1914, he was promoted to assistant general manager with headquarters at St. Paul and, in October of the same year, to general manager of the lines east of Paradise, which position he was holding at the time of his recent promotion. For a time in 1918 he served as acting vice-president.



J. M. Rapelje

Traffic

W. E. Coman has been appointed western traffic manager of the Northern Pacific.

H. S. Garvey has been appointed general agent of the Boston & Maine with headquarters at Detroit, Mich.

J. M. Strupper has been appointed assistant general freight agent of the Fort Worth & Rio Grande and its subsidiary companies, with headquarters at Fort Worth, Tex.

P. M. Fagan has been appointed division freight and passenger agent of the Chicago, Milwaukee & St. Paul, with headquarters at Terre Haute, Ind. Mr. Fagan will have charge of the Terre Haute division, including Chicago Heights, Ill.

J. V. Lanigan, assistant general passenger agent of the Illinois Central with headquarters at Chicago, has been promoted to general passenger agent with the same headquarters, succeeding H. J. Phelps, deceased. **J. W. Stevenson**, chief clerk to the vice-president in charge of traffic with headquarters at Chicago, will succeed Mr. Lanigan. **William Haywood**, assistant to the traffic manager with headquarters at Chicago, has been promoted to general freight agent in charge of solicitation with the same headquarters.

Fred L. Hanna, whose appointment as assistant general freight and passenger agent of the Atchison, Topeka & Santa Fe, with headquarters at Phoenix, Ariz., was announced in the *Railway Age* of November 5 (page 914), was born at Steubenville, Ohio, on May 1, 1869. He attended Wooster University in that state from 1888 to 1889. Mr. Hanna entered railroad service on September 1, 1891, as a clerk for the Atchison, Topeka & Santa Fe, and was promoted successively to rate clerk and chief clerk to the general agent, with headquarters at Los Angeles, Cal. On January 1, 1901, he was

promoted to traveling freight agent, in charge of the southern California territory, which position he held until January 1, 1909, when he left to become traveling freight and passenger agent of the Arizona & New Mexico. He left railroad service on January 1, 1914, to take a position as general agent for a commercial company. On August 1, 1918, he entered the service of the Inland traffic division of the war department and was given charge of this work in the States of California and Nevada. He re-entered railroad service on March 1, 1920, as division freight and passenger agent of the Atchison, Topeka & Santa Fe, with headquarters at Fresno, Cal., which position he was holding at the time of his recent promotion.

W. T. Wright, freight agent of the Illinois Central, with headquarters at Benton, Ill., has been promoted to supervisor of coal traffic, with headquarters at Carbondale, Ill. Mr. Wright was born at Scheller, Ill., on February 9, 1874. He entered railroad service in 1893 as a station helper and student of telegraphy on the Illinois Central, with headquarters at Tamaria, Ill., and his entire railroad career has been with that company. From 1894 to 1921, he has worked mainly in the capacity of an agent at various stations on the St. Louis division. The office to which he has been promoted is a newly created one. Mr. Wright will have general supervision over all coal traffic matters on the entire system, and will act as the field man under the direction of the manager of the coal traffic department, enabling that department to maintain closer supervision of that class of traffic at its source in the coal fields of Southern and Central Illinois, Indiana, West Kentucky and Alabama.

Mechanical

Ora S. Jackson, whose appointment as assistant superintendent of motive power and machinery of the Union Pacific, with headquarters at Omaha, Neb., was announced in the *Railway Age* of November 12 (page 964), was born at Huntington, Ind., on August 11, 1875. He entered railroad service as an apprentice machinist on the Erie, at Huntington, Ind., after which he worked as a round-house foreman and general foreman on the Cleveland, Cincinnati, Chicago & St. Louis for eight years. He then left that road to become general foreman and master mechanic of the Chicago, Indianapolis & Louisville, which position he held for five years, when he became superintendent of motive power of the Chicago, Terre Haute & Southeastern. After three years he was promoted to general superintendent in charge of the mechanical and operating departments, which position he held for five years up to the time of his recent appointment.



O. S. Jackson



W. T. Wright

S. G. Kennedy, general foreman of the Atlantic Coast Line at Lakeland, Fla., has been appointed master mechanic of the Tampa district with the same headquarters.

W. H. Dempsey has been appointed assistant division master mechanic of the Chicago and Milwaukee division and the Milwaukee terminal of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., succeeding G. E. Passage, promoted.

Engineering, Maintenance of Way and Signaling

W. W. Kelly, division engineer of the Atchison, Topeka & Santa Fe, with headquarters at San Bernardino, Cal., has been promoted to engineer of the Grand division, with headquarters at Los Angeles, Cal., succeeding W. H. Oliver, who was killed in an accident as noted in the *Railway Age* of November 26 (page 1061).

T. Martin, division engineer of the Revelstoke division of the Canadian Pacific, with headquarters at Revelstoke, B. C., has been transferred to the Nelson division, with headquarters at Nelson, B. C., succeeding J. H. Sloans, who has been building master there, and who will now replace Mr. Martin at Revelstoke, effective December 1.

Obituary

H. J. Phelps, general passenger agent of the Illinois Central, Northern and Western lines, with headquarters at Chicago, whose death was mentioned in the *Railway Age* of November 26 (page 1072), was born at Elmira, New York, on September 3, 1861. He entered railroad service in 1882 as a telegraph operator on the Illinois Central and remained with that company until his death. He was promoted to station agent at Onawa, Iowa in 1887, and later was successively ticket agent at Sioux Falls, S. D., and freight and passenger agent at Baton Rouge, La. In November, 1894, he was promoted to city passenger agent with headquarters at Chicago and was soon after appointed city passenger and ticket agent, with the same headquarters. In August, 1905, he was promoted to division passenger agent with headquarters at Dubuque, Iowa, which position he held until March, 1911, when he was promoted to general passenger agent, with headquarters at Chicago. Mr. Phelps died from meningitis on November 20, after an illness of four weeks in the Illinois Central hospital in Chicago.



H. J. Phelps

Lord Mount Stephen (George Stephen), the first president of the Canadian Pacific, died at Hatfield, Herts, England, on November 29 at the age of 92. George Stephen was born in Scotland, was educated in the parish schools and was apprenticed to a draper. In 1850 he went to Canada, entered business and, after a time, became a manufacturer of woolen goods. In 1876 he became president of the Bank of Montreal. Shortly thereafter he became associated with Donald Smith, later Lord Strathcona, and others in the development of the Northwest. In 1880 they organized the Canadian Pacific and George Stephen became its first president. He retired from this position in 1888 and has since made his home in England. It was in recognition of his activities in connection with the Canadian Pacific that George Stephen was made a baron.